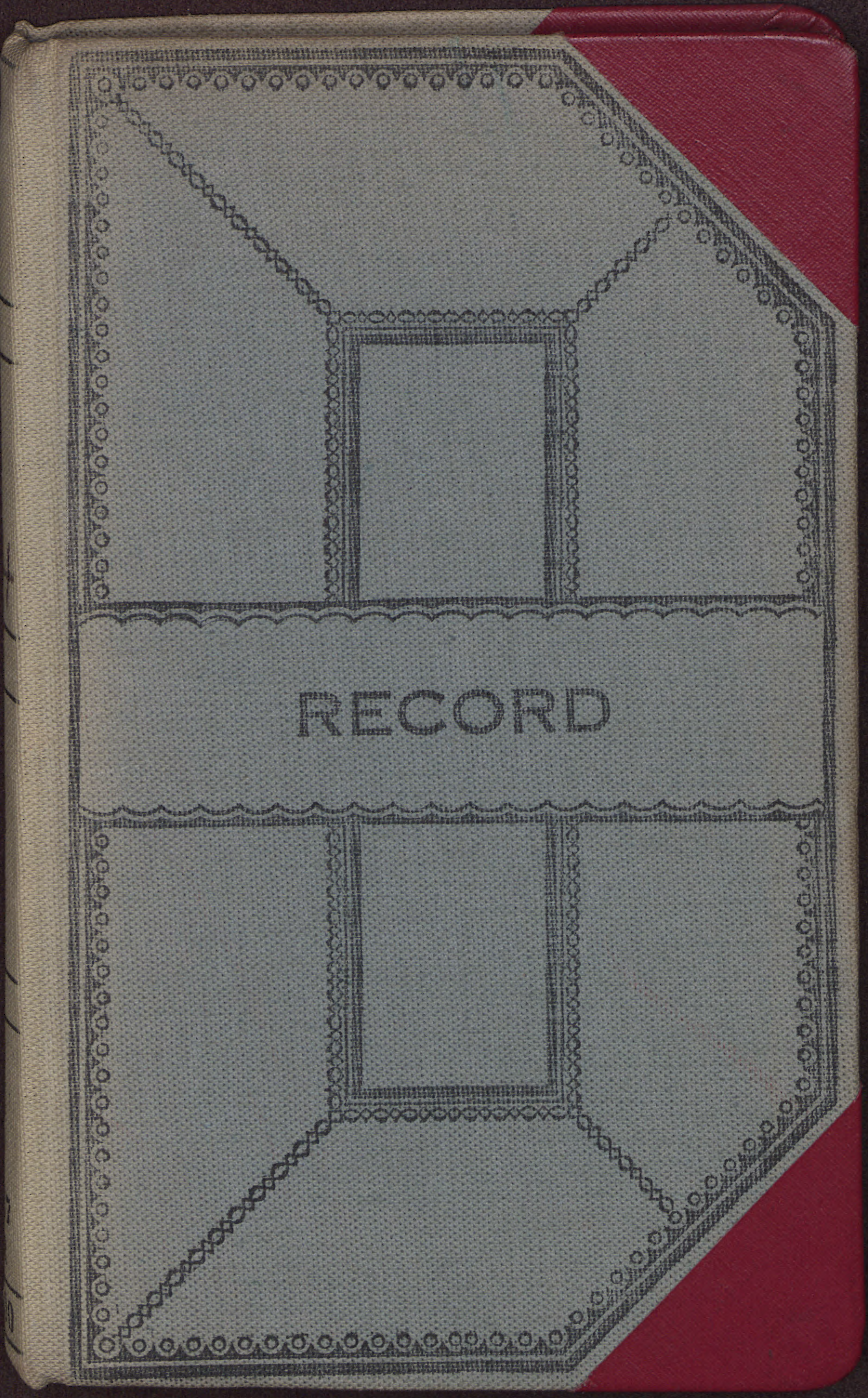

RECORD

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Mrs. Jean Kraus

#74

#45685

Collection and Field Note Book

No. 74

(July 26, 1964 - Nov. 30, 1964)

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Lurgan
Downpatrick
Newcastle
Newry
Dundalk
Drogheda
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Dun Laoghaire
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1964 France

July 26 – Foret de Fontainbleau
Open sandstone plateau covered with heather, birch etc. In this, is cut a canyon. with heather on sides and bottom. But just below edge a thin bed of limestone outcrops. Here the herbaceous flora is suddenly rich. Many species, almost none found on the sand above.
(P. Wolf- scattered Sedum sp. rosettes last year. a number of plants are growing)

Below, on lower slopes, Calluna and Erica are absolutely dominant: scattered Vincetoxicum, occasional Thymus, lichens in small openings, scattered young birch and pine.
A better flora in a small ravine draining down from limestone.

On plateau there is considerable grass mixed in the heather. An irregular surface of fine sandstone, with depressions that

nos. checked
labels typed HK

1964 France

are normally filled with water. Bare rock, heather, grass, pines, birches and Populus tremula between the depressions. After 2 months almost without rain almost all of the depressions are now dry. most plants dead. Dry moss abundant. One large grass is common (Photos Ekod + b+w. of landscape).

July 26 Foret de Fontainebleau

45685 Populus tremula
X 2 occasional on irregular sandstone
with heather

X1 86 Prunella
common on limestone outcrop
in sandstone canyon

X1 87 Campanula
common on limestone outcrop in sandstone canyon

X1 88 Asperula
rare on sandstone in ravine draining chalk bed

X1 89 Galium
rare on sandstone in ravine below chalk bed.

· July 26 – Avon (Seine et Marne)
near Fontainebleau

X1 90 Sonchus oleraceus L.
weed in garden

July 26 – road from Orly

flowers bright deep purple.

flowers deep blue – violet.

flowers white.

flowers yellow.

1964 Scotland

Aug. 8 - Edinburgh - Stirling - Pitlochry - Perth - Edinburgh by bus.

Some small patches of thick mixed deciduous wood in outskirts of Edinburgh. Mostly patches of houses and grain fields except where too rough. A small basalt outcrop just out of town.
Pastures on gentle slopes. Potato fields. Hedge rows many of them with large trees.

Firth of Forth Bridges at Queensferry
Planed off tilted beds of sedimentary rock, intertidal, - tide low, exposing large beds of Fucus bet. the two bridges. many gulls.
Escarpment wooded - partly deciduous, partly patches of Pinus sylvestris.

Epilobium angustifolium flowering along road. Grain (mostly barley) is mostly about ripe and yellow, some wheat and oats still green.
Toward Linlithgow quite a few pastures with sheep. Mustard in potato patches.

Om at. a large area of broken forest and meadow many flowers in openings, esp. Epilobium angustifolium. Fields of turnips or cabbages. Senecio cf. jacobeae very common and showy.

Rolling country with small hedges and scattered trees mostly in hedges. A few patches of woods or thicket. Mostly open country, grain or pasture. Potato fields with a few poppies.
Small lake and Linlithgow Palace.
Linlithgow is an old stone town. The lake extends along one side of it.
More gently rolling cultivated country. Patches of bracken and gorse on steeper slopes and scarps. Corylus thickets.

Polmont.
Falkirk - industrial city.
Then rolling land with patches of forest. Golf course. Pastures. cultivation. Thickets. Large culm pile older part wooded, with

Scotland

Pinus sylv. now side bare.
Country somewhat rougher.
Scarps wooded.
Some stone walls, not so many hedges.

Bannock Burn battle-field

More culm piles.

Stirling - picturesque stone town.

Crossed stream with several arched bridges.

Flocks of gulls.

Monument to Wm. Wallace. Battle of Stirling Bridge 1297. On a wooded promontory - a square stone tower

Bottom land fields, and semi-wooded scarps.

Bridge of Allan road to Dunblane.

The gardens, everywhere, are superb.

Scarps have mixed broad-leaf scrub forest. Slopes pastured, some grain fields. Epilobium conspicuous on roadsides and waste spots.

Dunblane

Gentle hilly land, mostly pasture, some forest plantations & groves.

Potato fields, grain, wooded

What I thought were turnips here and to p. 43 is apparently Kale, at least mostly.

ravines. Patches of thick woods. Turnips.
High hills in distance on both sides.

In openings in patch of pine forest, large rosettes of Dryopteris cf. filix-mas.
Patches of thickets and small openings with Epilobium, Senecio, etc.
Turnip and grain fields, potatoes. A few small groves, hedges, and scattered trees on long slopes. Broom, birch, Epilobium, etc. on waste spots.

Greenloaning.

Country gets rougher.

Occasional patches of open Picea, Betula, Calluna, Epilobium etc.
Hilly land is mostly cultivated, some pasture. More and more pasture as we get higher. Some bracken. Pine plantings. Spruce, also.

Then wide rolling heath, interspersed with fields; on tops of higher areas, cultivation-pasture-wood mosaic in lower places. Some heath. Some larch.

Scotland

Then gently rolling land, scattered trees, mostly oak & maple. Pastures and potato fields.

~~[illegible]~~ Moot Hill

Pastures with grass and scattered large trees. Rock ridges.

Broad ~~rolling~~ valley bottom, pasture, fields, rows of trees, thickets and patches of woods.

Crieff and River Earn.

Wooded hills, ~~some~~ slopes cleared, covered with bracken and saplings. Gentler slope in grain and pasture. Small woods of birch, alder, ash, etc.

Gilmerton.

Pastured hills with scattered trees and patches of wood. Much bracken locally on hills. Climbing into higher hills or low mountains. Some patches of mixed larch, beech, pine, etc. General landscape, mostly a mosaic of small patches of heather, bracken, grass,

broom, etc. locally cult. fields. Many cattle. Stone walls and fences, no hedges.

Heather and bracken become more and more abundant until they dominate the landscape.

Sma Glen.

Steep-walled canyon. Rocky. Heath covered. Stream in a gravelly bed.

Very common small V shaped ravines a foot or 2 deep & wide, run vertically down the slopes. Dryopteris abundant in rocky places. Trees along stream and in valley bottom, mostly oak, some maple. Planted larch, large and small.

Climbing out of this to right, up slopes covered by heath, bracken, Dryopteris, wet sedgy areas, some grass but not much. Much evidence of burning.

Glacial till in road cuts.

Broader valley.

Photos of cattle & of heather (b&w).

Scotland

Landscape is almost treeless, then descending a rocky valley, this mainly forested, largely spruce & larch plantations. Deciduous forest in ~~[illegible]~~ lower part of valley.

Dunkeld. River Tay Large, broad gravelly bed. Many gulls.

Conifer plantations on hills some pasture.

Spectacular cliffs

Broadleaf forest a mixture of beech & birch

Mostly larch plantation.

Across Tay valley are enormous conifer plantations showing patch cutting arrangement.

Much forest of weeping birch along road. Also larch, oak on slopes above heathy pasture

Bottom-lands & terraces along river cultivated.

Hills now with patches of forest, of pasture & heath. Broom on scarps near river & road cut.

Ballinluig

Strips of oak forest along river & on scarps. Scattered birch & oak with broom

& bracken. Epilobium on slope above, planted to pines sapl. seedlings.

Some hills bare & grassy or heath-covered, others with forest - conifer plantation & oak (on lower slopes)

Valley bottom very flat. Grassy.

Pitlochry

Valley of Loch Faskally up toward Killiecrankie is largely wooded, mostly with planted conifers, on all but its most level and steepest areas. Gentle slopes are pasture or cult. The ~~[illegible]~~ steepest are rocky ~~or~~ grassy & heathy.

Main ravine still has dense oak forest just below Killiecrankie.

At Killiecrankie there is a good forest, mostly Quercus robur, with considerable Betula, Fagus, a little Sorbus and Fraxinus also what appears to be Corylus, though it grows very large. This is on the steep slopes above the river. Much Urtica, Pteridium, Dryopteris, grasses of several species, Stachys spp. Epilobium sp.

Trees to 45-50 cm dbh (beech?)

Scotland

The view down the river Garry (Queens View) is magnificent. The birch forest is on the lower slopes above the river. The middle slopes tend to be grassy, but with much invasion by Betula, planting of trees. The upper slopes and summits of the hill are rocky and covered with heath.

From Dunkeld down the river to Perth – the valley, considerably wooded, esp. with scattered birch, oak, etc. Broadens out and becomes more and more completely cultivated, less wooded. Then, above Perth, woodlots become fairly common again.

Road leaves Tay Firth and goes through a side valley between partially wooded hill to Bridge of Earn. South of this a way the valley narrows to a densely forested glen. Open steep slopes here and there have fine displays of Epilobium angustifolium.

Change from these dense

woods into hilly country mostly grassy. Ravines and steep scarps densely wooded. Conifer plantations and patches of broadleaf forest fairly common. Potato fields on gentle slopes.

Glenfarg

Much gorse on grassy slopes

Steep mountains ahead, land less hilly and mostly cultivated in valley this side of them. Road turns westwards long before reaching these mts. Trees scattered along field boundaries.

Wide very flat valley, mostly in grain. Scattered patches of wood, especially on other side, where land becomes somewhat rolling.

Milnathort.

Kinross

Turned west toward Kincardine Br.

Rather flat country mostly in grain and pasture, scattered clumps of trees and [illegible], hedge rows, Aug 9 - Trip to White Coomb

(J. G. Roger, Trans. Proc. S.A. Bot. Club 39(1): 119-126, 1960.
Ratcliffe, D. ~~Trans.~~ ibid. 37:257- 1959.)

South from Edinburgh toward Peebles.

Penicuik

Rolling country, partly cultivated. Some small patches of wood and hedgerows.

Leadburn

Still rolling, perhaps more relief almost all pasture, no trees for some distance, then a few.

Then a series of wind-breaks of conifers as the relief increases. Some small young larch plantations. On steep slopes patches of broadleaf woods, small bits of heather and bracken.

Flat bottoms cultivated.

More forest plantings.

Beautiful patches of Epilobium

angustifolium.

Country has become quite hilly. Planting of Picea, Pinus sylvestris, etc. neat stone walls. Practically all pasture.

Then some grain and a few hedgerows, but still mostly pasture. Some scattered gorse on steep slopes, and perhaps a little heath on hilltops in distance. Gulls in pastures.

More woods in valley and on slopes.

Peebles.

Southward the hills become more and more completely forested, with pastures on the level bottoms and gentle lower slopes. Forest appears to be mostly ~~[illegible]~~ planted conifers. Then more open hills with only a scattering of patches of forest and wind-breaks.

Hills become higher.

Innerleithen - River Tweed.

Lower slopes of hills with forest or scattered trees, upper with sparse heath and grass.

Road directly south to St. Mary's Loch.

Patches of forest — conifer plantations & pasture with stone walls. Some scattered trees. Patches of ~~potatoes~~ turnips & cabbages on lower gentle slopes. Trees along streams in valley bottoms. Heath on upper slopes. Some grain, potatoes etc.

Traquair

Heath on tops and upper slopes. Birch woods on steeper escarpments, Oak on less steep slopes. Pinus sylvestris planting. More and more heather and bracken. West-facing slopes mostly heather, east facing more bracken & grass, but this very inconstant. A few tiny hay fields, otherwise a mixture of grass & heath.

The heath is a mosaic of small patches of Calluna, bracken, wet spots with sedges, grass patches. Proportions vary.

Has been forested over 1000 years ago, but sheep

grazing for 1000 years.

Where there is bracken it is considered that there once was forest.

~~Around~~ Above St. Marys Loch there are some trees in valleys, mostly pine, birch, etc. but on hills no trees at all.

Small bands of sheep everywhere. Some cattle. Grain fields & turnips(?) on flat valley bottoms.

Lowest, gentler slopes grassy, above, mostly bracken. On steep slope some small screes. Birches in small sharp ravines, also a few on lowest steep slope above lake. Various trees on lowest bank above lake.

Where lake banks are flat, cultivated fields and fenced pastures. Small mixed patches of planted forest just above these flats. A few patches of Phragmites on shore. Beaches of small sharp gravel.

Lake of the Lowes — small marshy spot in pasture much trampled by sheep. Juncus effusus, acutiflorus, Ranunculus & many other species. Nothing growing on gravel beach in water. This seemed remarkable to those familiar with such places. Probably result of road work a bit farther along the shore. Perhaps the new gravel has washed around the shore.

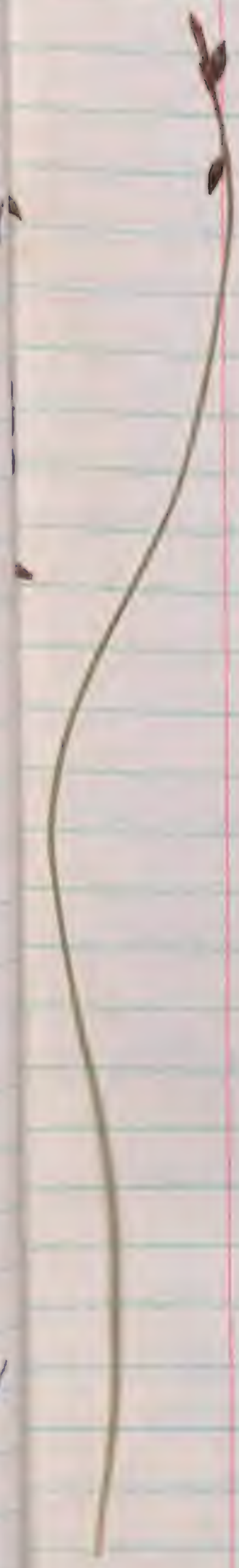
These valleys have steep (45°) slopes, very regular, narrow flat bottoms. Small, straight v shaped ravine run down these slopes.

Terrain resembles Finger Lakes region of New York.

Left side of valley (above loch of the Lowes) is grassy, the other (rt) mostly bracken. Slopes are about equal. Many sheep, a few cattle.

Entered County of Dumfries. Both slopes mostly grassy now. Grazing pattern on slopes. Heath on steeper, eroded areas. Small screes criss-crossed by paths.

Grey Mare's Tail (Falls).



Steep slope, perhaps 55°, with a sod of Agrostis tenuis & Agrostis
Festuca ovina, F. rubra,
Nardus stricta, with a liberal infusion of
Vaccinium myrtillus
Campanula rotundifolia
Galium saxatile (G. hercynicum)
Calluna vulgaris, Erica cinerea
Potentilla erecta (4 petals)
Patches of Pteridium aquilinum.
On screes clumps of Deschampsia flexuosa and Cryptogramma

On intrusion of basic rock more species are found, incl. Pinguicula

Euphrasia scottica and E. confusa form small hybrid swarms. E. scottica small-fld. & usually self pollinated E. conf. large-fld. & insect pollinated.

Marshy spots up on first bench with Eriophorum spp. Molinia caerulea, and 2 plants of Narthecium ossifragum (yellow fld.)

1964 Scotland

Long boggy slopes, probably typical moorland – an alternation of strips of Calluna with some Sphagnum and strips of wetter, lower land with ~~Carex sp.~~ Scirpus (Trichophorum) caespitosus, Eriophorum, Potentilla erecta and a number of grasses. (Photos). This was up to the top of a knoll. Upward much Vaccinium myrtillus, Rubus chamaemorus, Potentilla + Calluna.
Erica tetralix sp. common
Dryopteris sp. occ.

Trail to Gray Mare's Tail Falls
In wet rock cliffs
~~as~~ a ~~Polypodium~~ Selaginella, an Oxalis, a Draba?
Marchantia, Hymenophyllum
Linum catharticum
Blechnum spicant, Cryptogramma

The Hymenophyllum grows in small mats on rather dryish rocks, behaves like a resurrection plant. The fertile pinnules are in two rows on top of the frond.

On screes near the parking lot, Cryptogramma, Pteridium and Galium hercynicum are colonizing in abundance, Festuca ovina? and Deschampsia flexuosa, also and Anthoxanthum, Agrostis tenuis also. First abundant colonist is Rhacomitrium.

Valley below Gray Mare's Tail has a few cultivated fields on flat bottoms. Rows of pines + spruce planted, some broadleaf trees up around dwelling – Acer, Fraxinus. Sides about 45° slope, grassy except patches of bracken, some very large. Lower down stream is lined with small trees. Then large conifer plantation on on west side of valley. Then a semi-open woods of large oak, ash, beech, & elm. Above and beyond it the conifer plantation, here much younger.

Then the sides get lower, bracken more general, + a few scattered trees. Windbreak plantings in

1964 Scotland

the valley bottom and somewhat up the sides. Opens out into another valley where Moffat is located.

North from Moffat along valley of River Annan – cult. fields in flat bottom and on terraces. Pasture and small bits of woods on sides. Patches of bracken on some slopes. Mostly grassy. Wet places dominated by Juncus sp.

Up the valley the landscape is treeless except in valley bottom, where there are a few small plantings and a few trees along the stream.

Road leaves valley and crosses a high plateau – a ~~[illegible]~~ tussocky mixture of Scirpus, Calluna & grasses.

Source of R. Tweed

The moor is plowed up here for plantations of Larch (!)

Follow Tweed ~~to~~ north. Valley rather wide, gentle slopes. Grassy. No trees, ex. one small patch of conifer planting. Sheep everywhere.

Locally some heather.

Lower down more conifer plantings, some apparently as windbreaks.

Tweedsmuir.

Some broadleaf trees.

~~Alt.~~ Conifer plantings more common, usually as wind-breaks. ~~[illegible]~~ Slopes now mostly heather & bracken on e. side, some grass, with heath and bracken on w. side. Mixed. Scree on e. side. More and more heath & bracken on w. side. Some broken oak woodland on w. side. Stand of Epilobium angustifolium.

Cag.

Flat valley bottom.

Broughton. Scattered trees & open woods of trees in valley bottom – oak, ash, beech, maple – fairly large. Some conifer plantings on lower slopes. Hills grassy except for patches of heath near tops of some.

Then low hills, ~~[illegible]~~ mostly pasture. Larger hills in distance. Occasional cultivation.

[illegible].

Hilly, grassy, almost treeless, occasional cultivation.

Trees become more prevalent. Conifer wind-breaks & strips, some mixed, occasional.

Gulls scattered, with a few crows, in grassy field. Evenly spaced 2-3 m. apart.

nos. checked

label typed
JHK

1964 Scotland

Hills lower & lower. Oats more common, over considerable area. Beech windbreaks.
Romanno Bridge.
Wide flat valley. Trees along stream. Strips of trees, scarcely dense enough to be wind-breaks.
Conifer planting on hills in distance. Scattered trees rows & patches common.
Gently rolling country on left, hills on right. These get lower. Strips of thin woods. Potatoes, turnips, cattle.
Leadburn.
Rows of trees more prominent.
Plain with ravines incised into it. Larger ravines wooded.
Penicuik.

Aug. 8 - Pass of Killiecrankie
rare in mixed deciduous forest on slope near Queen's View

45691 Betula — tree 10 m. tall, 15 cm. dbh
specimens from trunk sprouts.

Aug. 9 - Loch of the Lowes
in marshy sod just back from shore of lake, grazed by sheep

1 92 grass
occasional

1 93 Carex ovalis
occasional

nos. checked

labels typed JHK

1964 Scotland

45693a Ranunculus (repens acris?)
✓1 common.

Aug. 9 – Gray Mares Tail

✓1 94 Galium hercynicum
abundant on stabilized scree slope

✓1 95 Hymenophyllum wilsoni
very local on dry rocks on trail just below falls.

✓1 96 Cryptogramma
common on scree slopes

✓1 97 Galium hercynicum
common on steep grassy slopes above falls.

✓1 98 Luzula
occasional on steep grassy slope above falls.

Aug. 9 – ~~[illegible]~~ above Gray Mares Tail

✓1 99 Narthecium ossifraga
occasional in marshy spots

✓1 700 Galium hercynicum
occasional on gentle slope in moor

✓1 01 Dryopteris "spinulosa"
occasional in moor

✓2 02 Juncus (Trichophorus) caespitosus
abundant, dominant in parts of moor

✓1 03 Deschampsia flexuosa
occasional in moor

---

petals bright yellow.

prostrate

curling and dark when dry, fertile pinnules in 2 rows on one ~~[illegible]~~ side of frond.
forming dense clumps.

prostrate

culms solitary

flowers yellow.

prostrate, flowers white.

~~[illegible]~~ forming dense sod.

1944 Scotland

Aug. 11 – Bus trip Edinburgh to Rannoch and Glencoe & ret.
Left Edinb. Through Corstorphine, past the zoo.
Low somewhat rolling cult. land, some trees. Grain, turnips, potatoes with scattered red poppies.
Airport (Turnhouse).
Some hedges and rows of trees, but many boundaries without hedges.
Kirk Liston
More hedges and rows of trees. Low flat-topped steep-sided hills are residues from oil-shale mines. Sides are thinly vegetated – grass & small bushes.
~~[illegible]~~ Winchburgh.
Shale mining has now been abandoned as uneconomical
Fields, many rows of trees, small woodlots, hedges. Mustard common in fields.
More shale mines.
Rolling cultivated country.
Linlithgow
Low hilly country with pastures & cultivation, some hedges. Patches of bracken and Epilobium angustifolium. Thickets.

Polmont.
Small hills. Bits of forest. Gorse on scarps.
Laurieston
Weedy patches with thistles and Epilobium
Callendar House with large grounds and part of old Roman Wall.
Falkirk.
Rd. to Stirling.
Fields & small woodlots. Golf course. Some fallow fields with grass, bracken. Thickets along ravines & stream courses. Hedgerows.
Plean. Large culm pile, one ~~[illegible]~~ and unvegetated, other with abundant small trees. Mine now closed as coal is exhausted.
Fields and small hedges & stone walls. Low spots with large Juncus. Grain field and pasture. Some turnips, cabbage & potatoes.
Bannockburn
Stirling.
Large stone wall with plants in crevices:
Linaria cymbalaria
Sagina (?) sp.
Poa annua
Poa (?) sp.

Matricaria (?) sp
Asplenium ruta-muraria
Athyrium sp.
Dryopteris sp.
Epilobium sp.

Photo (bad) of Stirling Castle.

Flat cultivated land and small wooded hills.

Campsie Hills. Pasture and some patches of wood + rows of trees. on left.

Flat cult. land on rt.

Steeper slopes of Campsie hills are bracken and forest plantations.

Hayfields in flat ground — hay being made. Some small woodlots. Forth Valley — very flat. Dairy country. Friesian and Ayrshire cattle. Large oblong hay-stacks + small round ones. Mostly hay fields used afterward as pasture, some grain. a few Vicia faba patches.

Low hills, pasture + grain. Patches of woods to right. Scattered trees on hills, mostly in fences.

Campsie. Hedges with scattered trees. Trees are oak, ash, maple, but mostly oa.

Some hilltops covered by broom

Buchlyvie

Extensive pasture with hedges, on gentle hills.

Hedge of Crataegus. Large trees along road. Small woodlots.

Hills change to rolling country, partly pasture, partly cult. Trees along roads and ravines, locally in wide strips.

Conifer plantation on rt., pastures, grain fields.

~~Dryg~~ Drymen

River Endrick.

Thickety woods and pasture on left. Hayfields on rt, then on left. Then better woods, forming a mosaic with pasture.

Wooded hill on left, bald on top. Patches of wood & thicket.

Gartocharn.

Low hills.

Senecio very abundant in fallow pastures.

Crataegus hedges and stone walls. Strips of wood. Cattle & sheep.

Hills higher but very rounded. Small woodlots.

Large hill ahead to rt.

Balloch, s. end of Loch Lomond.

River Leland, outlet of Loch Lomond.

West shore of Loch Lomond

Slopes with pastures and patches of forest, mainly oak. Rhododendron thickets — low dense rounded clumps. Hills on left with patches of wood and pasture on lower slopes, heath near summits.

Islands in lake partly wooded, partly grassy, with houses.

Broad valley with pasture and strips of trees, some cult. esp. potatoes and hay; some oats & turnips. Conifer plantings near Castle Rossdhu. Undergrowth of Rhododendron & ground layer of bracken.

Large pasture with scattered large trees, mostly oak. Patches of broadleaf forest. Large hill on left with conifer plantings.

Slopes more and more wooded, oak & planting of conifers. Some upper slopes with bracken and scattered

Photos of lake and hills (shots)

Luss. Alnus along shore.

Mountain on both sides of lake with grass

above forest on lower slopes partly oak, partly conifer plantings. On steep slope under trees Dryopteris filix-mas abundant, also bracken. Small hay fields.

Open slopes covered by bracken. Scrubby forest, open to closed.

On other side of lake, forest only on lowest slopes, stringing up ravines, and a few scattered trees upward to about 1/3 the height of Ben Lomond.

Inverbeg

Thickety oak forest on lower slopes, scattered trees in bracken upward.

On Ben Lomond a mosaic of heath patches in grass.

Slopes just above lake have a mixed forest of oak, ash, birch, etc. This in places closed, in places open.

Stuckgowan

The belt of forest on the steep slopes just above the lake, fading out upward, seems characteristic on both sides of northern part of ~~the~~ Loch Lomond

Tarbet

1964 Scotland

Erica on rocky cuts above road, Vaccinium also.

Woods very uneven, thickety, mixed, oak, maple, ash, birch, sorbus, alnus.

Ben Vorlich on left.

~~Juniperus thicket~~ Gorse on rocky bluffs.

Much birch in wood here.

Mts on other side very rocky.

On both sides vegetation varies from grass to open forest and woodland, opening covered by bracken.

Slopes on ~~both~~ sides steep, about 45°.

Then a rather wide relatively flat area, mostly clear.

Ardlui. Slopes bracken-covered with small patches of woods + thicket. Much Corylus.

End of Loch Lomond.

Glen Falloch. Narrow flat bottom. 45° slopes.

Broken, open wood and openings on valley floor. Some open to closed forest on lower slopes.

Falls of Falloch

Dryopteris abundant.

Myrica gale (?) in openings.

Upward the woods become almost entirely Betula, very patchy and dwarfed, principally along stream and in ravines. Some admixture of Corylus, Ulmus, Sorbus, etc. and gradually disappears.

Landscape now is a wide valley with bracken, grass, and Scirpus caespitosus, perhaps mostly the latter, a few birches near the stream and scattered Pinus sylvestris on lowest rocky slopes, these conspicuously umbrella-topped. Then these disappear. Only a sparse string of birches along stream and a ~~few~~ planted patch or two of conifers, some birch in a depression. Then open moorland of grass and Scirpus. Some plowing for reforestation on opposite slope.

Crianlarich.

Turn left into Glen Killin.

Calluna more local here. Bracken also. The two forming a mosaic with grass and Scirpus.

Heathy bank ~~at~~ ~~head~~ near mouth of Glen Fillin. Blechnum spicant, Calluna, Lycopodium clavatum, Dryopteris sp. etc.

Photos of landscape of Calluna and Blechnum. Col.

Mostly Calluna moor on left. Grassy valley flat on rt. some cult. Grassy hills across.

Dwarf scrub of Myrica gale (~~[illegible]~~?) local. Patches of Pinus sylvestris plantings.

~~Hotel~~ Tyndrum.

High grassy hills, trees only in ravines.

More and more admixture of Calluna.

County of Argyll

Ben Odhar and Ben Dorain — mt. high steep peaks of bedded rock. Screes on sides. ~~[illegible]~~

On left long slopes of grass with a few birches in patches here and there.

Very young conifer plantings on flat valley bottom.

Glen Orchy — Bridge of Orchy

Broad grassy valley more or less boggy. River Orchy is a fair sized stream flowing from Loch Tulla.

Trees in some abundance

along both sides of it.

Narthecium common in boggy spots.

Photos of lake.

Alder scrub at head of lake on sandy flats.

Stream entering lake lined with small alder.

Some hay-field in flat valley bottom.

Wet grassy hills above lake — Narthecium abundant. Small patches of Phragmites in wet ravine heads, rare.

In pass above, a solitary Sorbus growing from a crack in a large erratic boulder.

Loch Baa:

Some small trees & shrubs on islets in loch but none on shore. Many rocky islets. Phragmites common in shallow water.

Beginning of Moor of Rannoch. Very complicated lake on left. Moor is complicated by abundant low morainal hills, covered by Calluna.

Dwarf scrub of Myrica. and much Scirpus caespitosus general hummocky appearance

Erratic boulders very common. 1144' alt.
Vast rolling, hillocky area, surrounded by mountains, many small lakes. Wet holes & eroded spots, runnels & pools of water. Rather thin peat layer over till.
White Corries ski lift on left.
Peat seems to be 1-2' thick at most, where ~~exposed~~ the profile is exposed. Contrast abrupt with light colored till and sand. An occasional small tree, but very few.
Small plantings of conifers around building.
Spectacular peaks to west, on each side of Glen Etive, called Shepherds of Etive. (photo from bus)
Wild mountain scenery.
Calluna moorland.
Peaks are very rocky, little vegetation except on more moderate slopes (45°)
Glen Coe – Terrific rocky canyon
Many waterfalls. Ferns common on cliffs of the ravine in bottom of glen.
Three Sisters of Glen Coe, prominent knobby peaks on left.

gentler slopes of sides grassy. Screes with very thin grass, some bare or almost so.
Bracken on some lower slopes.
Magnificent U-shaped valley. Several fairly large trees (oaks, maples?) above a small lake.
This with abundant aquatic plants incl. Phragmites.
Conifer plantation in valley bottom, very thick.
Signal Rock.
Below this trees become fairly abundant on bottom & lower slopes, but not large. Alnus, Salix, Fraxinus.
Alnus most abundant.
Conifers planted locally
Village of Glen Coe.
Loch Leven. Down this far the mountains have a rounded appearance worn by glaciers, contrasting with the ragged contours a few miles up the glen.

Rannoch Moor –
Vegetation on peaty ground on small morainal hillocks –
A dwarf scrub of Calluna 2-3 dm tall, with tussocks

of Scirpus caespitosus, tuft of a grass (Molinia?), also Deschampsia flexuosa. The tops of hillocks were covered by Calluna, the depressions by grasses and Scirpus.

Narthecium in depressions, also a dwarf scrub of Myrica. Cushions ~~Clumps~~ of Sphagnum. Scirpus tussocks dense.

a	Calluna vulgaris	
a	Myrica gale	
a	Scirpus caespitosus	
c	Deschampsia flexuosa	
c	Potentilla erecta	
c	Erica tetralix	
c	Erica cinerea	
c	Molinia	
c	Narthecium	
lc	Scabiosa	
lc	Eriophorum sp.	
lc	Agrostis	
l	Vaccinium myrtillus	
l	V. vitis-idaea	
vl	Blechnum spicant	
lc	Euphrasia scotica	} in eroded spot
r	Polygala	}

Places where peat is broken are foci of erosion.

Rock outcrops, as well as erratic boulders have mosses and lichens (Parmelia, crustose)

A species of ant swarming on a rock outcrop, only crawling

on and flying around this one rock.

Vaccinium commoner around rocks. Otherwise they do not seem to affect vegetation much. Only Agrostis plants seen were on and against rocks. Only Blechnum seen sheltered by high boulder.

In eroded spot Euphrasia. Vaccinium vitis-idaea common. Deschampsia more common than elsewhere. Polygala 1 plant seen.

Entire area examined about 100 m. square.

Returning by ~~Loch~~ Glen Dochart with Ben More on right. Grassy with scattered thickets of Sorbus & Betula. Loch ~~Dochart~~ above Dochart is boggy around upper end. Cliffs along Loch Dochart have woods on them. Eriophorum bogs on bench above lake level. Lower end of Loch winding slack, with Phragmites. High slopes of Mts. have heath patches. More wood on scarps down Glen

1964 Scotland

Alders along streams.
Steep lower slopes densely wooded
Much heather on south side of valley on lower slopes, as well as higher.
River lined with gallery woods
Hay meadows in flat valley bottom.
Valley broadens out.
Mostly grassy but patches of wood. Some planting. Groves of Pines on lower hillocks. Trees in ravines.
Natural-looking woods become scarce, but there are many conifer plantings.
Smooth glaciated slopes everywhere cut by the straight steep V-shaped ravines.

Glen Ogle
Grassy slopes, patches of bracken, young conifer plantings.
Then slope heath covered with heath.
Lochan Lairig lure
Another rugged, very rocky steep-walled canyon.
Heath & bracken on sides.
Alder thickets in bottom.
Slopes become bracken-covered.

Bottom becomes more wooded toward Loch Earn Head.
on Loch Earn.
South the valley is wooded, lower slopes heathy.
Braes of Balquhidder
Much conifer planting on east side of valley, grass on west slopes.
Lower down both sides are covered by conifer plantings. Much of it Larix.
Strathyre
Loch ~~A~~ Lubnaig
Slopes still plantings of conifers but just above lake is some grass. Some alder thickets, and other broadleaf forests. Bracken ground layer. Some of conifer planting have been harvested.
Lower end of lake, old stand conifers on east side, and slightly farther down Pass Leny they end on w. side.
Another patch on east side.
Thick woods in bottom of valley and on lower slopes.
Kilmahog
Two conifer plantings on high slope to east, grass with scattered trees below.
Callander.

ms. checked

1964 Scotland – North Wales

Labels typed
JM

Aug. 11 – near mouth of
Glen Fillin, above Crian Laroch
on heathy bank beside road

45704 Calluna vulgaris
x 1 dominant

x 1 05 Linum catharticum
occasional

x 1 06 Euphrasia
occasional

Aug. 11 – Loch Tulla, above
Bridge of Orchy

x 1 07 Narthecium ossifragum
common in wet boggy places

Aug. 11 – Moor of Rannoch,
near head of Glen Coe
in Calluna heath on
small morainal hillocks

x 1 08 Euphrasia scotica
common very locally around
an eroded place

x 1 09 Agrostis
rare around erratic boulders
and rock outcrops

x 2 10 (grass) Mollinia caerulea
common

Aug. 13 – Newborough Warren Nature
Reserve, Anglesey Island, No. Wales
in "dune heath" area, stabilized dunes

x 1 11 Galium verum
common locally

x 1 12 Salix repens
dominant, forming dense mats

dwarf shrub; flowers
– dull lavender.

flowers white.

flowers purple

erect; flowers yellow.

~~flowers~~ corolla white to pink with
dark line running into throat.

tufts

in small tussocks, culms
bulbous at base.

stems erect, flowers yellow.

prostrate matted dwarf shrub

1964 Scotland & England

Aug 12 - trip from Edinburgh to North Wales by car.

Cultivated land for quite a few miles south, then hilly to mountainous moorland, mostly quite open, to Moffat.

More mountain south of this.

Crossed Solway over gravel plain, said to have interesting raised bogs.

North part of Cumberland is low, flattish to rolling land, agricultural.

The Lake District is spectacular, mountainous and rugged, with considerable forest, and high moorland. The lakes are beautiful. The landscape has a less modified appearance than is usual elsewhere in England.

Just south of the Lake District are two limestone mountains that are practically bare on their tops and upper cliffs, wooded on slopes, said to be very interesting, with great cracks with special vegetation.

1964 N. Wales

Aug. 13 Newborough Warren Nature Reserve (declared 1955)

Flat area of grassland with small pond, back of a wide belt of dunes. Agrostis, Arrhenatherum Holcus.

The tall grasses have become prominent since myxomatosis reduced rabbits.

Adjoining the reserve is a large forestry project, where plantations of a great variety of conifers have been made on sand dunes.

Llandwin Island is a mass of old rock, partly covered by dunes.
Here are bracken patches heath, and Ammophila.
Also patches of Holcus.
Photos (b&w) of landscape and several close-ups,
Also of Crithmum maritimum on rocks.

5 public rights-of-way to beach, one to Llanddwin I.

Anglesey I.

The front of the dunes and the tops of the seaward row, are covered by an almost pure stand of Ammophila arenaria. The top of the beach above h.t. has a scattered growth of Atriplex spp. hastata & laciniata.

Arenaria peploides
Agropyron cf. junciforme
~~Chrysanthemum~~ ~~sp~~ Matricaria maritima
Salsola
Rumex sp.

Back from edge, dunes are covered by Ammophila but with a considerable number of other species
eg. Ononis repens
Hypochaeris cf radicata
Viola curtisii
Euphorbia
Festuca cf. ovina
Festuca cf rubra
Agrostis sp.
Salix ~~sp~~ repens photo
Alopecurus(?) sp.

"Slacks" small flats in dunes with Salix dominant.
Carex arenaria
Hypochaeris
~~Arenaria spp.~~ Sagina nodosa
Carex ~~cf goodenowii~~ flacca

1964 N. Wales

Centaurium cf. maritimum
Anagallis tenella
Euphrasia sp. , var prostrata
Equisetum ~~cf.~~ variegatum
Hydrocotyle sp.

Dune heaths (photo) are flats above the level of the slacks, covered by a dense dwarf scrub mat of Salix repens. some Thymus
Carlina sp. common.
Helebrus sp.
Gentiana amarella (local colony)
Galium verum
Agrostis
several other grasses
Trifolium sp.
Lotus corniculatus.
Potentilla cf. anserina

Elongate pond, surrounded by marsh vegetation of Iris, Menyanthes, etc.

On this pond were numerous coots, canada geese, herring gulls, and 2 swans. The geese are naturalized, and becoming a nuisance to local farmers. The herring gulls are increasing and are crowding out other birds, such as terns.

Anglesey, 9

The variation in number of species from the beach inland is of interest.

There are perhaps half a dozen species at the top of the beach. In the outer dunes there may be as many, in addition to the dominant Ammophila. The "slacks" have a few more, including some local, unusual, either restricted or widespread continental ones not usually found in Britain. The "heaths" have possibly the same number, perhaps more, but not necessarily the same ones. Then inside the dune belt, on the sandy flats, the number is larger, including less of the same species but many meadow ones. Then as the pond is approached, the ground becomes wetter and the number of species rapidly increases until the marsh is reached, which has a considerable flora. This is less, however, in the actual margin of the pond, where Menyanthes and Polygonum(?) sp. are in almost pure stands.

1964 N. Wales

Aug 14 - Cwm Idwal Nature Res.
Great glacial cirque
with grassy lower slopes -
Nardus stricta very promin-
ent - prob. because of
some overgrazing by sheep.
Sheep run free here - the
grazing rights leased by
Nat. Trust to local grazers.

Exclosure with sheep
excluded for 6 years
has more luxuriant grass
with most Agrostis and
with some clumps of
heather, both Calluna
and Erica cinerea. Nardus
still present.
This on gentle moraine
slope.
The general flora is
from here

Nardus stricta
Agrostis tenuis
Potentilla erecta
Galium
Mollinia coerulea
Polygala
Sphagnum
Blechnum
Carex (4 places)
Rhacomitrium
Polytrichum
Calluna

la Lycopodium alpinum
o Festuca

Wet places have ~~at~~ a
number of additional species,
incl Juncus
Thymus
Prunella
Euphrasia sp.

On a high wet cliff below
Devil's Kitchen, the wet
crevices and overhangs have
Selaginella
Campanula rotundifolia
Asplenium viride
Calluna
Arenaria stricta
Pinguicula vulgaris
Silene acaulis
~~Selago~~ Lycopodium selago
Solidago virgaurea
Oxyria digyna
Potentilla erecta
Festuca ovina v. vivipara
Sedum rosea
Thalictrum
Polygala vulgaris
Euphrasia sp. Sax. oppositifolia?
Agrostis Oxalis acetosella
Thymus Scabiosa
Alchemilla sp. umbellata

1944 Wales

On boulders Vaccinium myrtillus mats.
One tiny colony of Saxifraga caespitosa 6-7 plants only one south of Scotland.
Sax. stellaris & S. flagellaris in wet places.
Cryptogramma common in rocks. Geranium robertianum & Dryopteris sps in deep crevices

Small rock in lake has Sorbus
Crataegus
Deschampsia
Blechnum
Calluna
Vaccinium

Large area of Juncus cf. effusus at head of lake on foot slopes of mountain.

This whole area is grazed by sheep. The cwm is a "sheep walk" and the stocking seems to be determined by the habits of the sheep themselves. They have a sort of territoriality. If understocked sheep from neighboring sheep walks will come in. If overstocked, the sheep numbers will wander out.

no. checked

labels typed XX

1964 North Wales

CWR slide

Aug. 14 - Cwm Idwal, above Llyn Idwal, Snowdonia
On relatively basic rocks and soil

45713 Asplenium viride
✓ 1 in crevices of cliff

✓ 1 14 Cystopteris fragilis:
in crevices of cliff

✓ 1 15 Selaginella
occasional under overhanging wet ledge

✓ 1 16 Carex
on small ledge

✓ 1 17 Lycopodium selago
occasional on ledges and grassy slopes

✓ 1 18 Lycopodium alpinum
abundant on grassy slopes

Aug. 14 -
2 mi. above

on rocky banks

✓ 1 19 Galium saxatile
common

✓ 1 20 Ulex europaeus
rare

✓ 1 21 Ulex gallii
common

rachis green, fronds spreading

rhizome prostrate, deep in turf;
Below branches somewhat compressed, tending to be glaucous

prostrate, forming mats

shrub 1 m. tall, well past flowering, spines grooved when fresh.

— shrubs 0.6–0.8 m. tall, in full flower, flowers bright yellow; spines terete or almost so when fresh.

[illegible] checked

labels typed
NK ''

1964 North Wales

Aug. 15 Llyn Peris
slopes above lake

45722 Drosera rotundifolia L.
✓1 in small bog on terrace
✓1 23 Hymenophyllum tunbridgense
common on ledges in oak forest on
✓1 24 Hymenophyllum wilsoni
common on ledges in oak forest on
✓1 25 Hypericum
local in Sphagnum along
rivulet on small terrace in
✓1 26 ~~Dry~~ Thelypteris dryopteris
local in oak woods

Aug. 16 Cwm Artro
on moist rocks in dense
oak forest.
✓1 27 Hymenophyllum tunbridgense
locally abundant
✓1 28 Hymenophyllum wilsonii

hairs on leaves red; flowers
white.

flowers yellow.

forming deep mats
on vertical surfaces.

1964 N. Wales

Llyn Peris

Aug. 15 - In a patch of broad-leaf wood on a series of narrow steps or terraces, these quite mossy, both species of Hymenophyllum growing side-by-side.

Small bog with much Drosera rotundifolia, also Hypericum

Dwyryd Estuary

Glaciated monadnocks, with Calluna, Erica and Ulex gallii on smooth rock esp. in crevices.

In a small grotto in semi-darkness & splashed by a waterfall a tiny colony of Trichomanes radicans.

South of here - photos of slopes with oak forest near Harlech

Cwm Artro stream

Rocks of Cambrian grit

Wind sheared oak forest (photos)

Small terraces with bog

Festiniog - Pennad

Blanket bog -

Calluna dominant, with Scirpus caespitosus

~~[illegible]~~
Juncus effusus
Carex echinata
Erica tetralix
Empetrum nigrum
Drosera
Eriophorum angustifolium
E. vaginatum
Juncus squarrosus

with much Sphagnum spp. and Polytrichum commune with many other bryophyte

2-3' of peat.

Mouths of estuaries south of Carnarvon are mostly reclaimed by diking mouths and stream margins. The flats thus cut off are used mainly for pasture and are very poor land.

1964 Wales - ~~[illegible]~~

Aug. 10 - Bangor to London by train.

At low tide vast sand flats are exposed, with no apparent vegetation.

Back of the coast a narrow coastal plain is cultivated and in pasture. Locally small salt marshes.

~~This coast~~

Llanfair Fechan

This coastal strip pinches off and steep slopes come down to beach.

Penmaen Mawr

A narrow coastal plain again.

Seaward is the peninsula, the Great Ormes Head, a synclinal arrangement of sedimentary beds (limestone?)

Broad beach ~~[illegible]~~ at head of bay with dunes. Flat back of dunes completely covered by trailer camp.

Steep slopes covered by bracken.

Conway is a mediaeval town with a fine castle and a wall surrounding old town. Very large estuary with sand bars and some grass.

River Conway

Large heron with gray plumage, whitish neck and wing bars. Crows(?) and gulls. The hill west of this is covered by dense forest.

Llandudno Jct.

Reclaimed flats, mostly pasture, east of estuary.

Hills have oak woods on tops. Pastures with hedges (Crataegus?) on lower slopes, others cleared to tops. Some with pine plantings, some bare on steep escarpments.

Colwyn Bay.

Hills back of it well wooded.

Broad coastal lowlands. Largely built up to houses.

Then rolling land with pasture and scattered trees. Much trailer camping.

Then a small mesa of
Cefn-yr Ogof flat beds of white rock
Some trees on slope.
A castle on n.e. side.

Then [illegible].

Abergele and Pensarn station.

Extensive very low flats, mostly covered by trailer camps.

1964 Wales.

Then much housing.
mixed with small pasture.
Estuary of River Clwyd.
Rhyl.
Some flat land - pasture
where not covered by trailer camp.
Row of willows leaning
strongly landward.
Small but thick patches of Phragmites.
Prestatyn
Flats with strip of
dunes in front, hills with
pasture, grain field, hedges,
patches of wood and bracken
behind. Sheep pastured
on flats. Areas without
sheep support stands of
Senecio jacobaeus. Small hedges.
Talacre Some trees
- rows of trees on flats
Extremely broad tidal sand
flats (Mostyn Bank)
Thickets of Crataegus
and small trees on
landward side.
Mostyn.
Chilobium angustifolium
and Eupatorium cannabinum
prominent.
Cultivated coastal flat
protected by embankment
to keep out sea.
Low cultivated hills
with hedges back of flat.

Wales - England.

Holywell Jct.
Wide estuary on north
side of track. Wide, closely
grazed salt marsh flats.
Then some flats of Phragmites,
etc. back of slightly
higher ground.
Flint
Extensive flat - grazed
salt marsh on north,
cult. and housing on
south of R.R. track.
Much ditching and
embankment.
Connahs Quay.
Industrial area. horrible.
Some pasture.
Queensferry.
More pasture with hedges
Rolling hills with rows
and scattered trees in
distance. Extensive flat
~~country~~ Air strip. Pasture,
cult. hedges. rows of trees
Much housing.
River
Chester.
Extensive pastured flats,
with hedges and scattered
trees - some cultivation.
Trees are largely oaks with
spreading round crowns.
This continues for a long way,
with cult. increasing somewhat.

1964 England

Ground becomes a little higher but still in pasture and flat.

Two castles to south. One on a distant ridge, one on a precipitous isolated rocky mesa near railroad.

Land becomes somewhat hilly.

Beeston Castle and Tarporley

Pink gravel being dug from a hill. Hills are pastured with scattered trees. Some grain fields. Gorse on steeper slopes.

Terrain flattens out, but pattern still pastures with Crataegus hedges.

Becomes very flat, then slightly rolling.

Canal with boats.

Part pasture, part misc. cult. - grain, cabbage & kale.

Crewe.

Flat land, grain fields hedges, scattered trees. Grain ready to harvest. Some kale. Some pasture. Hay being harvested.

Land becomes more rolling. Much of it pasture.

Slightly more hilly, a few tiny woodlots.

Calluna on RR cut banks.

Willow thickets in low spots, willow trees along

streams.

Yellow-green pastures and fallow fields with dark green scattered spots - marks of cattle droppings.

Some waste land on ~~N.~~ side with thickets and Epilobium

Scattered trees, mostly oaks.

Broad flat with large willow groves. Also many large scattered pollard willows.

Small canals and ditches with Typha, etc.

Stafford.

Rolling to somewhat hilly country, partly cult., partly pasture, some slopes with heath, some gorse, hedges, trees, patches of wood on slopes.

Small river with flat grassy bottom land.

Hills in distance to south with conifer plantations.

Country otherwise somewhat rolling to flat, mostly cult. Scattered trees.

Rugeley (?)

Flat valley with hills along sides. Some industry. Fields & hedges. Small woodlots. Mostly pasture

1964 England

Broad flats with hedges.
A canal with boat.
Land becomes more rolling.
Mostly grain fields.
Canal. Some woods on low hills.

Broad low flat.

Tamworth.

Rolling land, mostly cult., some waste, with Epilobium. Coal mine waste heaps. Ponds

Polesworth.

Rolling land, fields separated by ~~a~~ low hedges.

Atherstone

Low wooded hills and flat fields between them then green pasture on rolling ground ~~[illegible]~~ separated by hedges. Mine dumps, tips, ~~[illegible]~~ conical hills.

Nuneaton

Low flats. Alfalfa & pasture some grain. Thickets, hedges, scattered trees, for a considerable distance. Then rolling terrain. Canal along m.

Rugby

Rolling to hilly, cultivated land & pasture, hedges & scattered trees. Much housing.
Long tunnel under a hill.
Rolling pasture & grain

field, hedges, small patches of wood and scattered trees.
for some distance without much change.

Castle — —

A broad green flat with willows along streams.
Then gently rolling grain land, partly being harvested, with fewer hedges, some scattered trees.

Bletchley

Pond with belt of Typha around it. Another, probably a clay pit, as there is a brick works nearby.
Rolling grain-land and pasture with hedges and scattered trees. Hay meadows, a few orchards.
More hilly country, pasture and some woods.
Willows along streams.

Linslade Tunnel.

Leighton Buzzard

Rolling pasture & grain land.
Willows along streams. Scattered trees, few hedges or small ones.

Cheddington

Grain field, a few orchards a few hedges.

Tring

Hilly, some wooded. Grain fields.

1964 England,

Berkhamstead.
Hilly country. Canal with barges along it.
Crataegus hedges. Grain fields.
Small lake. Patches of forest.
Hemel Hempstead
Apsley
Pasture with scattered large trees. Chalk country.
Willows along river and in and around small lake.
Kings Langley Ovaltine factory + farm.
Canal that runs from Manchester to Watford –
Forest on hill along it.
Watford Jct.
Housing + industry. Small area of willows
Bushey.
Semi-open country, housing, meadows, rows of trees.
Carpenders Park.
Hatch End
Meadows, gardens, rows of trees, housing.
Harrow & Wealdstone
Less and less open land.
Kenton
Large flat with meadows. Industry.
North Wembley. Industry & housing the rest of the way.

1964 Illinois

Aug. 23 – Trip by auto south from Urbana to Olney

Almost flat, checkerboard maize and soy beans, a few pastures, one or two small patches of wood.

Setaria faberi very abundant on roadsides and edges of fields.

This area is generally east and south of Urbana. Slightly lower spots have a black soil. A few drainage ditches. Locally patches of roadside with some prairie plants, e.g. Asclepias verticillata but mostly sprayed & mowed. Ditches with some native species – Asclepias incarnata, Solidago spp. etc. A few scraps of hedge but mostly no trees except around houses and along ditches and channelized streams.

Polygonum pensylvanicum. (near Newman).

So. of Brocton is Catfish Creek. Woods along it and patch of "Oak opening": open grove of oaks.

South of this toward Kansas is more hedge-rows and trees.

West from Kansas hwy. follows a rr. The hwy. right-of-way is closely mowed, that of the rr. has abundant herbs – Oenothera biennis, Solidago, etc.

Soil becomes poorer and more sandy (Illinoian moraine), more rolling. More woodlots. more wooded stream courses and depressions; more hedges. Even fallow fields with Solidago. Much Ambrosia trifida.

Then a vast flat area with fewer trees and scattered oil wells. Then the oil wells drop out

Still corn and soy beans.

N. of ~~just with~~ Casey a woodchuck along rd.

South of Casey are many more groves of trees and hedges woodlots. Fields quite weedy with Setaria faberi. Gray soil. Much Robinia. Hunt. Some areas here said to have breeding prairie chickens.

South of this some groves of pin-oak, silver maples. Much wood in landscape, rows of trees mainly oaks, groves, wooded depressions.

Embarras R. Wooded bottom land. St. Marie. What appear to be pin oaks are very common.

West of this woodlots with oaks, hickories catalpas, ~~etc~~. Robinia, etc. Thick hedge-rows.

Euphorbia cf. corollata very prominent locally along road. Cassia abundant. Vernonia.

A good sized wooded area, probably a swamp, south of Newton.

Abunt Cassia and near two species of Helianthus along roads.

Some oil wells.

West Liberty

Abundant patches of wood to west.

Small lakes. Woods in ravines and depressions. Herbaceous swales.

Country just north of Olney rolling. Some patches of good second-growth.

South of Olney forest is more and more abundant. Land rather rolling. Around Mt. Carmel some very good forest.

Forest of the Wabash -

Cercis
Ulmus amer.
Prunus ser.
Fraxinus amer.
Quercus imbricaria
Q. macrocarpa
Gleditschia
Carya ~~p~~ illinoensis
Carya sp.
Sassafras albidum
Acer nigrum
Asimina
Liquidambar
Celtis occidentalis
Rhus tox.
Parthenocissus

Polygonum virg.
Eupatorium rugosum
Arisaema dracontium

Undergrowth of Asimina, Cercis, Cornus florida, not thick but abundant, much Rhus Toxicodendron, some Vitis.

On flood plain Boehmeria, Pilea, Phytolacca, Eupatorium coelestinum, E. sp. Sida spinosa, Ruellia sp., Muehlenbergia sp., Campsis. Acer saccharinum, Carya illinoensis, Ulmus americanus, Platanus, Diospyros Celtis laevigata, Populus delt. Liquidambar

The understory is almost absent here except scattered Campsis, Rhus tox. etc but in a blow-down opening there is a low thicket of seedling ash, elm, red maple etc. Otherwise, grass and Boehmeria, with other herbs.

Acer negundo. Betula nigra
Ampelopsis sp. Vitis sp
Gymnocladus (young)

Other end of property
Cornus ~~flo~~ sp.
Quercus coccinea (40" dbh)
Q. ~~alba~~ Q. macrocarpa
Ulmus ~~Q. bicolor~~
Celtis occ.
Carya (shagbark)
Q. bicolor (but very large teeth)
Cercis
Fagus Juglans nigra
Morus rubra
Ostrya

Low shale bluff above
creek.
Marchantia
Polystichum acrostichoides
Adiantum pedatum ?

1964 Delaware

Labels typed
45729-
45754

Sept. 5 – just north of
Indian Inlet
on recently disturbed
sand just back of
artificial dune barrier

45729 Cakile
3 occasional

3 30 ~~[illegible]~~ Cenchrus tribuloides L.
common

4 31 Panicum amarulum Hitchc. + Ch.
common

4 32 grass
common

1 33 Cynodon dactylon
common

2 34 Digitaria
common

Sept. 6 – ~~just south of~~ near Assawoman Recreation Area
~~South Bethany~~, 3 miles south
of Bethany Beach
on sandy flat with
low dunes

1 35 Rhus toxicodendron L.
common

3 36 Scirpus
locally abundant in low places

3 37 Rhus toxicodendron L.
common

1 38 Parthenocissus quinquefolia
rare

(to p. 88)

---

fleshy, green, flowers
small. petals pinkish.

small tufts.

large clumps, culms
ascending to erect,
panicle somewhat
drooping.

culms decumbent, sharply
bent and ascending,
rhizomes creeping,
terminal part white.

culms ascending

shrub 1 m tall.

rhizome deeply buried; culms
triangular.

erect shrub 1 m. tall
with slender creeping
branches at ground level.

vine climbing in brush,
flowers and ripe bluish fruit.

1964 Maryland

Sept. 6 – South Point, 11 mi s. of Ocean City

Open field, just back from tide water, closed herbaceous veg. just beginning to be invaded by shrubs.

a	Cassia nictitans
a	Daucus carota
c	Solidago sempervirens
a	Trifolium pratense
a	Aster ericoides
c	Paspalum
c	Paspalum
o	Allium vineale
o	Eupatorium
o	Prunella vulgaris
c	Eragrostis spectabilis
lc	Cirsium vulgare
la	Euthamia graminifolia
a	Andropogon cf virginicus
c	Plantago lanceolata
a	Agrostis?
l	Cassia
c	Setaria viridis
c	Holcus
o	Panicum virgatum
l	Solidago
l	grass
lc	Ambrosia artemisiifolia (mostly in open spots)
o	Panicum
o	Poa ?
c	Lespedeza striata
a	Juncus tenuis

Shrubs invading

a	Juniperus virginiana
c	Baccharis halimifolia
o	Prunus serotina (s.)
c	Rubus cf. argutus
c	Lonicera japonica

In open spots

Ambrosia artemisiifolia
Poa
Agrostis
Daucus
Aster ericoides
Plantago lanceolata
Eragrostis spectabilis
Lespedeza striata
Solidago sempervirens

1964 Delaware

Sept 6 - north of Fenwick Island.

The Army Engineers have built a straight ridge of sand, with a sand fence in the top of it just back of the beach. This ridge seems to maintain almost exactly the height of the fence.

Back of the ridge, on the edge of the sand flat, they planted 2 rows of a coarse grass, probably Ammophila. Not a single plant of this survived.

On the upper 2/3 or 3/4 of the ridge are no plants. On the lower portion and base, on both sides, is a zone of widely spaced Cakile with some Euphorbia polygonoides and a few wisps of Arenaria(?)

The Cakile varies from seedlings to fruiting and dried up plants with ripe fruit. Both locules of the fruit have seeds with green cotyledons

Small dunes are scattered on certain parts of the flat back of the ridge. Other places are flat clear to the sound. Some of the outer part of the flat is bare, or with a few scattered Euphorbia.

Other areas have a thin ground cover of a grass (45732) ~~[illegible]~~ and a little Euphorbia - the plants from 1 to 10 dm apart (~~[illegible]~~ centers).

Other areas are low dunes, probably not more than 1 m. high, with a thin but continuous binding of Panicum ~~sp.~~ amarum with a few clumps of Ammophila ~~[illegible]~~ and occasional plants of Euphorbia and Solidago sempervirens.

A very few clumps of Panicum virgatum and of one that is possibly a hybrid.

Somewhat higher dunes dominated by Ammophila with occasional Panicum amarulum.

The P. amarum forms a very thin loose mat, strict infl. with buried running rhizomes. P. virgatum and P. amarulum form erect clumps. Hybrid smaller clumps, strict infl.

Part of same flat covered by very low dunes and a half dead open scrub of stunted pine (all dead) to 4 m., a form of Vaccinium cf. corymbosum with large subcoriaceous leaves, a curious Rhus toxicodendron, a very prickly Rosa a stunted Prunus serotina (1 m?), Myrica, Baccharis.
in opening Ammophila and various ~~sp~~ Panicum & low grass (: #137) Hudsonia,

Sept. 7 - Sandy Cove, Indian River Bay
The grass, at 8 a.m was very heavily covered with dew, after a very clear night. The tents, also, in the camp ground, were very wet all the way to the top, ~~It~~ to at least 2.5 m.
This is true of the plastic tents as well as the canvas ones.

Sept. 7 Ocean City
ride in small plane
Photos of Ocean City, one of small marsh island in bay several of bay and forest south of it.
Much forest south of Bay. blocks show different ages and proportion of pine.
Barrier beach stretching southward has rather little vegetation.

from page 80

1964 Delaware

45739 Rosa
4
rare

~~40 Rhus toxicodendron~~
~~common~~

3 40 Rhus toxicodendron L.
common

2 41 Vaccinium
very common

1 42 Hudsonia tomentosa
locally common

1 43 Prunus
occasional to common

1 44 Prunus
occasional to common
(teeth of both these not right for P. maritima)

3 45 Cyperus
common in moist sand

4 46 Cakile edentula (Bigel.) Hook.
common at base of
artificial dune ridge

5 47 Euphorbia polygonifolia L.
common at base of
artificial dune ridge, ~~~~ and
less than 1.5 years in place.

5 48 Panicum amarum Ell.
common to abundant on very low dunes

Sussex Co.

low densely branched
shrub, "primocanes"
erect, fruiting canes
depressed.

shrub 1 m. tall,
flowers pale greenish
(about as many seen
flowering as fruiting -
see #45735, 45737.)

shrubs 0.7 - 1 m. tall,
all seen sterile, leaves
notably venulose
and almost subcoriaceous

plant gray-green.

sterile shrub, abundantly
branched, leaves plane.

sterile shrub, much
branched, leaves folded.

caespitose, culms prostrate

fleshy, flowers less than 5 mm
across, petals pinkish.

prostrate, green, roots
all slender, shoots
forming small mats.

rhizomes deeply buried,
culms depressed, tending
to be solitary, leaves and
~~spikes~~ panicles glaucous, panicles
uniformly very narrow

nos. checked

1964 Delaware

labels typed xx

45749 Panicum
3 rare, growing with
P. amarum (45748) and
P. virgatum (45750) ⇉
4 50 Panicum virgatum L.
~~common~~ occasional on low dunes
2 51 Panicum amarulum H. & C.
occasional on higher dunes
3 52 Ammophila breviligulata Fe.
abundant on higher dunes
4 53 Mikania scandens
climbing in roadside thicket
3 54 Phragmites communis Trin.
dense stand in wet
sand
12 55 Pluchea purpurascens v. succulenta
common in wet sand

Sussex Co.

small tufts, culms
ther
.
x
cous.
row.
s.
omatic,

Write labels
45779 – 45755
use blank blanks
✓

Write labels

45779 – 45755

use blank blanks

✓

nos. checked

1964 Delaware

labels typed JK

45749 Panicum
3 rare, growing with
P. amarum (45748) and
P. virgatum (45750) ⇒

4 50 Panicum virgatum L.
~~common~~, occasional on low dunes

2 51 Panicum amarulum H. & C.
occasional on higher dunes

3 52 Ammophila breviligulata Fern.
abundant on higher dunes

4 53 Mikania scandens
climbing in roadside thicket

3 54 Phragmites communis Trin.
dense stand in wet
sand

1-2 55 Pluchea purpurascens v. succulenta Fern.
common in wet sand

Sussex Co.

small tufts, culms
erect, panicles rather
narrow, plant
somewhat glaucous.
— Tall clumps,
panicle open, plant
not notably glaucous.
Large erect clumps,
plants glaucous,
panicle rather narrow.
— Twining herbaceous
vine, flowers whitish.
— canes 2-3 m. tall.

erect, very resinous-aromatic,
flowers rose-pink.

1964 Maryland

Sept. 6 - about 7 miles south of Ocean City

labels done

in tall second-growth hardwood forest.

45756 Clethra alnifolia L.
5 very common in undergrowth

2 57 Uniola laxa
common in old road

Sept. 6 South Point, 11 mi south of Ocean City
labels done ~~[illegible]~~
in weedy field just back of ~~[illegible]~~ tidal estuary. a sound.

3 58 Myrica pensylvanica Loisel.
common, invading

1 59 Poa
occasional, especially in bare spots.

1 60 Plantago lanceolata L.
common

2 61 Paspalum ~~[illegible]~~
common

1 62 Strophostyles helvola (L.) Ell
rare

2 63 Solidago
local

1 64 Cassia fasciculata Michx.
rare

1 65 grass
occasional

1 66 Andropogon
common

1 67 grass
rare

Worcester Co.

shrub 1.5 m. tall, larger leaves from young sterile

— plants about .5 m. tall.

culms ascending, leaf blades flat.

dense shrub 1 m. tall, aromatic.

— densely caespitose.

stems spreading, leaves appressed ~~flat~~ to earth.

— small tufts, very

— erect, glaucous.

erect.

erect

flowers yellow.

erect

1964 Maryland

4 45768 Cynodon dactylon
1 occasional

1 69 Agrostis
common

2 70 Panicum virgatum
occasional

4 71 Solidago
locally common

2 72 Eupatorium
occasional

1 73 Holcus lanatus ?
common

1 74 Lespedeza striata
common

1 75 Panicum
rare

Worcester Co

small patches.

clumps, erect.

erect, heads yellow.

erect, leaves gray-green,
flowers whitish.

depressed, caespitose

1964 Virginia

labels done

Sept. 12 – Skyline Drive
n. of Dundo Hollow Overlook
45776 ~~at~~ Celastrus orbiculatus
1 5 + 3 abundant on road cut

Sept. 12 Dundo Picnic Area

labels done
in thin forest, mostly oak
2 77 Celastrus orbiculatus
in cleared area with
scattered trees, climbing
on apple tree.
1 78 Vaccinium vacillans
common ~~in~~
79 Vaccinium angustifolium
common in rocky place.
1 80 Solidago buckleyi 7x9.
occasional in rocky places
2 81 Cirsium discolor (Muhl.) Spreng.
occasional in edge of woods
4 82 Agrostis
occasional along trail in thin woods
6 83 Solidago
under pine trees in thin
rather dry woods

labels done
Sept. 13 – Shenandoah National
Park Headquarters, Pass Run
2 84 Malva neglecta Wallr.
weed in lawn around building

---

900 m

tangled vine, fruits
greenish orange.

900 m

tangled woody vine,
sterile.

dwarf shrub, leaves
glaucous beneath.
dwarf shrub; leaves
green beneath, somewhat
glossy
heads yellow
plant 1.5 m. tall, heads
purple.
loose tufts, dry.

petals pinkish, well
exserted. Leaves slightly
grayish green.

1964 Virginia

Sept. 12 – Along Skyline Drive Nyssa is already red and losing leaves.

Betula lenta (or B. alleghaniensis or both) are quite yellow.

Parthenocissus red or maroon.

Shenandoah Nat. Park

1964 Virginia

labels done (year)

Sept. 13 – Skyline Drive,
foot of little Stony Man Trail
in edge of hardwood forest

3 45785 Carya ovalis
occasional

4 86 Tilia heterophylla
occasional

labels done (year)

Sept. 13 – Skyline Drive
south slope of Hawksbill
in thick hardwood forest

3 87 Celastrus orbiculatus Thunb.
local on road cut and in
edges of forest

2 88 Prunus serotina

3 89 Acer nigrum var. glaucum
common

2 90 Fraxinus americana
common

1 91 Corallorhiza cf. maculata

ms. checked
labels typed
SK

Sept. 13 – Jarman Gap Fire Road,
near Skyline Drive.
in edge of forest

4 92 Spiraea betulifolia v. corymbosa
locally abundant

1 93 Lactuca
rare, on bare soil

1 94 Zizia
rare

3 95 Hieracium paniculatum
common

Shen. Nat. Park

Tree about 10 m. tall.

small tree, leaves
whitish beneath.

3500'

twines; sterile.

small tree, fruit
– fleshy, black
tree 15 m. tall; leaves
glaucous beneath;
– sterile.
– medium sized tree.
plant bronze color, incl.
capsules.

erect stems from
– prostrate woody rhizomes
flowers yellow.

plants somewhat glaucous.

nos. checked
labels typed

1944 Virginia

45796 Campanula divaricata
X1 occasional on bare soil
X2 97 Aster
occasional
X1 98 Aureolaria
rare
X2 99 Prenanthes
common
J45800 Solidago squarrosa Muhl
4 common
X3 01 Erechtites hieracifolia
very common locally on bare soil

Sept. 13 - Sawmill Run
just inside Park Boundary
on flat, [illegible] wooded
ground in valley bottom.
X1 02 Leersia virginica
rare in edge of small
patch of Sphagnum
X1 03 Amelanchier
occasional
X5 04 Lespedeza
occasional
X2 05 Ilex
in undergrowth in
forest [illegible] on low damp [illegible] ground
X2 06 Athyrium felix-femina f. rubellum
common on low damp [illegible] ground
X2 07 Ilex
common in undergrowth
on low damp ground
J2 08 Hypoxis aurea
in open power-line right-of-way

---

several erect stems
— from base
erect, solitary, in bud only.

erect, flowers whitish
drooping.

erect, flowers yellow

erect, stem succulent;
flowers grayish.

—

shrub 3 m. tall, sterile.

stems ascending

shrub 3 m. tall; sterile.

rachis reddish.

shrub 3-4 m. tall,
sterile.

nos. checked.
labels typed

1964 Virginia

45809 Vaccinium cf. corymbosum
X1 rare in undergrowth
on low moist ground

X1 10 Pyrus arbutifolia
common in undergrowth
on low moist ground

√7 11 Alnus
common in undergrowth
on low moist ground
in and around patch
of Sphagnum

X4 12 Sphagnum
local patch on low
wet ground.

X6 12 Osmunda claytoniana L.
common on low moist
ground

√5 13 Aster
occasional in edge of woods

x4 14 Aster
in open power-line right-of-way

X2 15 Lespedeza
occasional in thin woods

X4 16 Lespedeza
occasional in thin woods

√2 17 Desmodium
occasional in power-line
right-of-way, rocky soil

X1 18 Lactuca
rare in open power-line
right-of-way, rocky soil

√2 19 Desmodium
occasional in open power-line
right-of-way

Shen. Nat. Park

sterile shrub 0.8 m. tall.

sterile shrub 3 m. tall.

shrub 2 m. tall.

large rosettes, rhizome
vertical.

rays white, disk dull
dark brick red.

stems erect

erect

several ascending stems
from woody root-stock.

ws checked
labels typed

1964 Virginia

45820 Pseudotaenidia ~~Cryptotaenia~~ montana Mack.
✓ 1 rare in open power-line right-of-way, on rocky soil.

✓1 21 Heterotheca mariana
occasional in open power-line right-of-way on rocky soil.

✓1 22 Conyza canadensis
occasional in open power-line right-of-way on rocky soil.

✓3 23 Andropogon scoparius
common in open power-line right-of-way on rocky soil

✓1 24 Tephrosia virginiana v. glabra
common in open power-line right-of-way on rocky soil

✓5 25 Desmodium marilandicum (L.) DC.
in open power-line right-of-way on rocky soil

✓4 26 Euphorbia corollata
common in open power-line right-of-way on rocky soil

✓3 27 Panicum
in open power-line right-of-way on rocky soil

✓1 28 Helianthus divaricatus
occasional in open power-line right-of-way on rocky soil

✓1 29 Prenanthes altissima L.
rare on open power-line right-of-way on rocky soil

✓3 30 Gaultheria procumbens
abundant in thin oak forest

~~rare in~~

plant almost erect, rays bright yellow, disk greenish yellow.

small tufts, purplish green, culms erect.

? stems ascending; plant sterile.

several stems from erect woody root crown.

leaves turning reddish; gland-appendage white.

tuft, culms ascending.

rays and disk yellow.

stem prostrate with erect branches; wintergreen odor when broken; fruit immature.

nos. checked

labels typed

1964 Virginia

45831 Vaccinium vacillans
✓1 common in oak forest

✓2 32 Solidago caesia
occasional in open power-line right-of-way

✓1 33 Vaccinium cf. pallidum
common in open woods on rocky slope

✓1 34 (leg.)
rare on rock-slide in woods

✓5 35 (leg.)
common on rock-slide in woods.

✓3 36 Solidago
common on edges of shallow ravine in woods

✓2 37 Campanula divaricata
common in woods on flat ground slightly cut by ravines

✓1 38 (leg)
rare on rock slide in woods

✓3 39 Hypericum hypericoides ad. & Rob.
occasional in open power-line right-of-way

✓1 40 Lobelia inflata
rare in open power-line right-of-way.

✓2 41 Myrica peregrina
common along road in open

Shen. Nat. Park

low sterile plant, leaves somewhat glaucous
— beneath.

stems slightly glaucous.
heads yellow.

low plant, sterile;
leaves not very
— glaucous beneath.
sterile

erect to twining herb,
pods semi-terete.

heads yellow.

corollas blue-violet.

stems ascending. (same as
— # 45835?)
prostrate.

low shrub, fragrant
when broken; sterile.

nos. checked

labels typed AK

1964 Virginia

Sept. 27 - Wildcat Mt. Preserve, west base of mountain near Enon Church, in second-growth hardwood forest

45842 Silphium
X 1 rare

X 2 43 ?
rare

✓3 44 Aster
common locally

✓2 45 moss
abundant in bedrock stream-bed in crevice

X 2 46 Aster
locally common

X 1 47 Viburnum acerifolium L.
common

✓3 48 Galium
local on rocks in ravine bottom

✓5 49 Desmodium nudiflorum
common

X 2 50 Rosa carolina
common

X 2 51 Solidago
very local

X 1 52 (leg.)
rare

✓1 53 Scutellaria
occasional

✓4 54 Hydrangea arborescens
common

✓3 55 Collinsonia canadensis
common

~~Loudoun~~ Fauquier Co.

erect

erect, 1 m. tall, ~~[illegible]~~ sterile.

rays white, disk dull yellow turning reddish.

rays purple

shrub, 1 m tall,
— fruit black, fleshy.
procumbent; roots yellow, turning reddish.

small shrub

heads yellow.

herb ~~[illegible]~~ to 1 m. tall, from stony-hard root; corolla light yellow.

nos. checked
labels typed

~~D~~ 1964 Virginia

45856 Heuchera
✓1 rare
✓3 57 Boehmeria cylindrica
occasional in stream-bed
✓1 58 Hypericum punctatum Lam.
occasional
✓1 59 Bromus
occasional in old road-bed
✓1 60 Desmodium
rare in old road-bed
✓2 61 Anemone
common in old road bed
✓2 62 Polygonum virginianum
~~o~~ local in old roadbed
✓ ~~✓~~3 63 Muhlenbergia
occasional
✓1 64 Solidago
rare
✓2 65 Aster lateriflorus
common along old road-bed
✓1 66 Agrimonia
occasional along old road bed
✓2 67 Clematis ochroleuca Ait.
common locally

Fauquier Co.

from branching root crown

erect

heads yellow

rays white, disk
dark red
– fruits easily detached.

1964 Virginia

Oct. 3 – Northern section, along Skyline Drive.
Some trees changing color – Fraxinus purplish yellow, Carya yellow, oaks still green

Oct. 4 Rattlesnake Point Overlook 3105 ft.
semi-open rocky slope.
Hogwallow Flats Overlook 2665'
M. 11.14

ms. checked

label typed

1964 Virginia

Oct. 4 – Elk Wallow Shelter

45868 Carya
X 1

Oct. 4 – Skyline Drive
near Elk Wallow
in edge of hardwood forest

X1 69 Chelidonium
occasional in weedy ground

X1 70
common in weedy ground

X2 71 Vitis vulpina L.
climbing in trees

X4 72 Vitis aestivalis Michx.
climbing in trees

X5 73 Crataegus chrysocarpa Ashe

X5 74 Crataegus boyntoni Beadle?

Oct. 4 – Skyline Drive; 1 mi n. w. of
Elk Wallow, m.p. 23
in edge of low forest

X5 75 Crataegus macrosperma

Shenandoah Nat. Park

Tree 20 m tall, ~~[illegible]~~.
bark flaky. nuts
from ground. (same tree
as no. 45505)

roots red-orange when
broken. Sterile at this season.
sterile at this season

woody vine; leaves
green beneath; sterile.
woody vine; leaves
glaucous beneath,
fruit purplish, sour.
large shrub 3-4 m. tall;
fruit greenish yellow.
shrub 4 m. tall, much
branched, fruits dull orange-red.

shrub 3 m. tall; fruit bright
red, juicy; nutlets of C. basilica.

nos. checked
1964 Virginia
labels typed

Oct. 4 – Rattlesnake Point Overlook
~~[illegible]~~ embankment below
Skyline Drive, in full sun

45876 Heliopsis?
✓ 4 occasional

✓ 2 77 Arctium minus
occasional

same – on semi-open, semi-
wooded rock slope

✓ 1 78 Ribes rotundifolium Michx.?
occasional

✓ 1 79 Hedeoma pulegioides
very local in very thin soil

✓ 3 80 Ostrya virginiana (Mill.) Koch
common

✓ 1 81 Anemone virginiana
rare

✓ 2 82 Solidago flexicaulis L.
occasional

✓ 2 83 Vitis aestivalis Michx.
occasional, climbing on bushes

✓ 1 84 Polygonum cristatum Engelm. & Gray
rare

✓ 2 85 Rubus cf. argutus
common

✓ 4 86 Asplenium platyneuron
common

✓ 1 87 Ribes rotundifolium L.?
occasional

✓ 3 88 Hammamelis virginiana
very common

✓ 3 89 Panicum
very common

Shenandoah Nat. Park

3135'
950 m.

rays bright yellow,
disk dull yellow, raised.
root thick, heads purple.

950 m.

sterile shrub.

strongly aromatic

shrubby tree 5 m. tall

~~[illegible]~~ woody vine, leaves fallen
fruit blue, with bloom.
poor flavor.
herbaceous twiner.
canes erect, 1 m. tall.

sterile

shrub 3 m. tall, leaves
already shed (others with
some leaves still), petals yellow.

nos. checked
labels typed

1964 Virginia

45890 Aster cordifolius L.
X 4 occasional

X 5 91 Crataegus basilica Beadle
common

X 6 92 Carya cordiformis (Wang.) Koch
occasional in hardwood forest

Oct. 4 - Hogwallow Flats Overlook
on open slope below overlook

X 1 93 Vitis labrusca

X 1 94 Bidens bipinnata
common

X 2 95 Crataegus succulenta Link ?

X 2 96 Pyrus ~~angustifolia~~ coronaria L.

same - in grassy roadside

X 3 97 Crataegus macrosperma Ashe

X 3 98 Rosa canina

X 2 99 Symphoricarpos orbiculatus
large clumps

45900 Carya ovata
X 1 in edge of forest

Shen. Nat. Park

950 m. stems ascending; phyllary-tips dark purple; rays lavender, disk reddish

shrub 2.5 m. tall; fruit juicy, bright red.

tree 15 m. tall, bark close.

small woody vine, sterile.

disk yellow, rays whitish very short.

shrub 3 m. tall;
fruit firm, bright red.

small tree 3-4 m. tall, very thorny; apples yellow, on ground beneath tree.

shrub 3 m. tall, fruit bright red, fleshy

large bush 2 m. tall, fruits scarlet.

bush 1 m. tall; fruit purplish red

small sterile tree 10 m. tall.

1964 Virginia – Georgia

Oct. 14 – flying from Washington to Atlanta – Going south from Washington for a considerable distance forested land makes up at least 90% of the area on the Virginia side of the Potomac. At this season the scrub pine patches stand out very clearly. Some of the broadleaf trees are changing color – Liquidambar, Cornus, Fraxinus, etc. but the landscape is generally still green. The pine is a solid, soft, by comparison almost bluish green.

The proportion of cleared land increases southward.

Oct. 14 – driving north from Atlanta –

Tallulah Gorge – a deep slash in the mountain mass where the Blue Ridge extends into Georgia

General vegetation a rather scrubby mixed forest of pines & oaks

The country rock is a rotten granite.

Northward the country becomes mountainous The more level places

are cultivated. Hills all wooded. Some bluffs are only thinly wooded. Fall coloring ll begun.

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a hilly
plateau, partly wooded, partly cultivated.

Mrs Foster
Horse Cove

near Warm Spr.
8 mi from W.S.
Cedar Rock, near Greenville
granite outcrop

Howard
Calloway development
Calloway Gardens

Frank Hill
Greenville
has more than
usual interest in
such things

Rev. Santey, near Flat Shoals
near Griffin Ga
Flint River

1964 Virginia - Georgia

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The country rock is a rotten granite.

Northward the country becomes mountainous The more level places

are cultivated. Hills all wooded. Some bluffs are only thinly wooded. Fall coloring well begun.

Above Mountain City is a broad valley surrounded by rather abrupt mountains.

Dillard to Highland - spectacular drive through wooded mts.

A waterfall to rt. just above Dillard.

Kudzu is very abundant along roads and in edges of forest, climbing in trees and covering embankments.

Forest largely oaks, but with tulip, red maple, abundant, some sour-wood. Some Pinus strobus but young.

Up fairly high the coloring is spectacular.

Well up there is a hilly plateau, partly wooded, partly cultivated.

1964 North Carolina

Oct. 15 – Horse Cove, Highlands
Deep valley with steep hills and cliffs around it. Black Rock is a sheer cliff, smooth on face
J.H. Howe place.

Large open scrubby bog or swamp.
Gentiana cf. saponaria
Diervilla sessilifolia
Alnus serrulata
Acer rubrum.
Lyonia ligustrina
Hypericum frutecosum
Pyrus arbutifolia
Sarracenia purpurea
Eriophorum virginicum
Viburnum
Rosa palustris
Cornus sp.
Osmunda [illegible] claytoniana
O. regalis
O. cinnamomea
Juncus.
Orontium
Aletris farinosa
Smilax rot.
Amianthium
Ilex verticillata
Chelone
Rhus venenata
Andropogon glomeratus
Vaccinium sp.

Aster 3-4 sp.
Vernonia
Scirpus eriophorum vel aff
Salix cf. caroliniana
Galium obtusum
Eupatorium perfoliatum
Spiraea latifolia
Pycnanthemum sp.?
Helichrium

Highlands Station

Mrs. Valentine would be a good person to have on a project committee.

Mrs. Clarkson
a very wealthy 85 year-old much interested in Museum, gave the 6 acre "wildlife area" to station. (send her a brochure and solicitation at once)

Dr Thelma Howell - very aggressive, outspoken director of station.

Miss Helen Augur - competent garden-club woman.

Mrs. Mitchell - has 18 acre place, with motel, fine garden.

Mrs. J. H. Howe
Horse Cove

Prof Ralph M Sargent
4 College Circle
Haverford, Penna.

USFS Dist. Farris
Nelson

Peterson
Ranger
Highlands

Oct. 15 - Cullasaja Gorge
bet. Highlands and ~~Franklin~~ Gneiss

A deep gorge cut in gneiss or schist.

Luxuriant hardwood forest, very mixed, with a liberal scattering of Pinus strobus (some very large) and Tsuga. Dense undergrowth of Rhododendron, etc.

Acer rubrum, Betula alleganiensis, Liriodendron Magnolia fraseri, several oaks, but these not a very prominent in vegetation.

Several magnificent waterfalls, long cascade races with occasional ledges.

1964 North Carolina

Oct. 15 – Horse Cove, Highlands
in brushy Sphagnum bog.

45901 Eriophorum virginicum L.
X 3 locally common

X 1 02 Juncus cf. debilis
common

X 1 03 Viburnum nudum L. cf. var. angustifolium T.&G.
very common

X 1 04 Chelone cuthbertii Small
occasional

X 1 05 Gentiana cf. cherokeensis?
common in edges of

X 1 06 Leucothoe axillaris (Lam.) Don
~~in~~ occasional

X 1 07 Hypericum prolificum L.
locally abundant

X 1 08 Dulichium arundinaceum
occasional

X 1 09 Lechea cf. minor L.
occasional around margins of

Oct. 16 – valley south of Chestnut
Ridge, Highlands

X 1 10 Selaginella rupestris (L.) Spring.
abundant on rock cliffs

X 1 11 Leucothoe editorum
abundant, forming a
dense shrub layer in
hemlock-hardwood forest

X 1 12 Gentiana pilosa
common in second-growth
hardwood forest on east-facing
slope

Macon Co.

erect, breaking off very
easily at base.

shrub 1 m. tall (others
taller), fruits soft, blue-black.

flowers light blue-violet

stems, petiole and
budding spikes coral red.
shrub 0.5 m. tall (others seen
to almost 2 m.). closely
branched.

forming large cushions

tangled shrub 1-2 m. tall.

flowers white with
purple lines on outside
of throat, closed.

1944 North Carolina

Lindsay Olive place
4 acres

Open grove of big Tsuga canadensis, some hardwood, with dense undergrowth of Rhododendron and Kalmia, some Acer rubrum, Populus, Hamamelis, etc. Widely spaced large trees of Quercus rubra, Q. prinus, Magnolia fraseri, Acer rubrum, Q. alba, Pinus strobus, in addition to the Tsuga canadensis.

Castanea
Cornus alternifolia

Mr. Wright has land adjoining. similar.

Wright place
Small gorge beside Chestnut Ridge — has magnificent hemlock and hardwood forest tulip, red maple, black birch

On south side rather small hardwoods with mixed undergrowth some Kalmia, Cornus florida, Halesia, Symplocos, Castanea, Carya, Rhod. calendulaceum, Rhod. maximum, Liriodendron seedlings. Acer pensylvanicum. Many huge fallen chestnuts

undergrowth thick but clear enough for walking

Macon Co.

N-9 Tract Nantahala Forest — mountain with Tsuga caroliniana and Pinus pungens

"Chestnut Ridge

Bottom of gorge is choked with tangled Rhododendron maximum & "dog hobble", Leucothoe and some other shrubs, with great hemlocks towering above. Magnolia fraseri, large, Clethra, Betula lenta, Liriodendron, Quercus rubra, Acer rubrum, Halesia

Trillium 3 spp.
Mitchella
Goodyera

About 70 acres bounded on 3 sides by ~~Forest~~ Nat. Forest (e. s. by nat forest), on west by Wright tract from which it is being cut off, on north side by another private owner.

Is a reasonably self-contained valley (head is not on property).

North Carolina

Cowee Gap (On Rt. 64)

Magnificent view over rock hills toward Cashiers to east.

Whiteside Mt. on rt. vertical cliffs. Knobs in distance. Small knobs in middle distance, with bare rounded shoulders, valleys & slopes filled with Betula Acer rubrum Quercus, Liriodendron, etc. now a blaze of red, orange, & yellow. A few conifers along ravines. Juniperus virginiana on ledges of Whiteside.

View directly toward Asheville.

Jct. Blue Ridge & Cowee Mts. 4200 ft.

Rock is Gneiss.

Radford, A.E. et al
Guide to the Vascular Flora of North Carolina
Bot. Exch. - U of N.C. Chapel Hill $3.95 paper 6.30 hard.

Vogelmann, H.W.
Natural Areas in Vermont.
Vt. Resources Res. Center Rept. 1 1-29, 1964
Ag. Exp. Sta. U of Vt. Burlington

get

Macon Co.

The Highlands area, Macon Co. North Carolina, is in the heart of the southern Blue Ridge, in a complex of rounded granite or gneiss mountains, cut by deep gorges, and largely covered by rich hardwood and mixed hemlock-pine-hardwood forests. The area is floristically and faunistically rich and physiographically diverse. Most of the forest has been logged over, and some has been pastured or farmed. The immediate area of Highlands has some flattish plateau-like land. There are deep, flat-bottomed valleys called coves, an outstanding one of which is Horse Cove.

Some of the outstanding biotopes are hardwood forests, hemlock forests, mixed conifer-hardwood forests, cliffs, rounded granite tops and slopes, Sphagnum bogs, cascade chutes, waterfalls, small streams, artificial ponds, etc. There does not seem to be much variation in geologic substratum.
(over)

1964 North Carolina

The Highlands Biological Station is the logical center for scientific research in the area, and is a very active institution. A number of universities maintain tables there (at $100 per year) and are represented on the board of trustees. It is otherwise an independent enterprise, originally started and sponsored by W. C. Coker. Its director is an able, agressive, direct physiologist who is clearly broad enough in her appreciation of other fields to back many kinds of studies. Her name is Dr. Thelma Howell. The Station has two substantial buildings and has just received an NSF grant to build another. The Station differs from others in that it is not a summer school, has no classes, but is used entirely for graduate and post graduate research. It has about 6 acres of ground where the buildings

are, about 6 acres of lake adjoining, and a six acre natural or "wildlife" area. This station would be the logical user of any natural area preserves established in the Highlands vicinity.

The town of Highlands is a resort town, with about 600 year-around residents and 1000 summer residents, many of the latter wealthy people who maintain summer homes there, some very elaborate. The year-around population is divided into "natives" – mountaineer people, mostly poorly educated and with little appreciation for nature, and retired well-to-do people, mostly from Florida or the North. There is not too much harmony between the two groups, and the town is unfortunately controlled by the "natives". There are a few active better class people, also, such as Dr. Howell, the Mitchells, etc.

(over)

There is some interest in a natural area preservation project on the part of a diverse section of the population, from which it would be fairly easy to select a project committee.

This is an immediate thing, because one area is to be offered to us as a gift as soon as a single boundary can be surveyed and a deed prepared. This is a tract of 20 acres or so of virgin hemlock and hardwood timber, offered by a NC member, Mr. Henry Wright, an old time resident of Highlands. Mr. Wright is a self-educated naturalist of rather unusual ability, very modest and homespun, but active, and interested and involved in many public matters, including the Biological Station and the museum. He would be an invaluable member of a project committee. He also has

the advantage of apparently getting along well with all the people who would be involved in this, including Dr. Howell.

Another area that the owner says she is willing to donate is a bog in Horse Cove, of possibly 15 - 20 acres. This belongs to Mrs. James H. Howe, a local resident whose husband's family have owned a property of about 150 acres for a long time. Col. Howe died several years ago. Mrs. Howe, who lives on the property, is now trying to subdivide it and sell lots, though she certainly does not need to, as she seems well-fixed, financially. She perhaps needs to as an outlet for a certain amount of hyperthyroid energy. She is a charming, intelligent lady, but with no scientific background. Her bog is along Big Creek, and has been substantially enlarged by recent beaver activity. The beavers are said to have come about 10 years ago, have built a complex of dams, have cut many trees, and bothered Mrs. Howe no end. She will give us this land, but may need a little nursing along.

The bog is an expanse of Sphagnum, with shrubby vegetation of alder, Viburnum, swamp rose, black gum and other swamp shrubs, and a good assortment of swamp herbs. Its margins have, unfortunately, been planted to white pine, and probably grazed some. There are very few Sphagnum bogs in the southern Blue Ridge, and even though this one has had the pines planted in it, it is of great interest and will be a valuable area to be preserved.

Another area that I visited is a small property owned by Prof. Lindsay Olive, of the Botany Dept. of Columbia University. The central feature of this is a grove of very large, old hemlocks, and some hardwoods, widely spaced, but with a dense undergrowth of Rhododendron, Kalmia, and other shrubs, including the interesting Pyrularia, of the sandalwood family. It is an unusually southerly station for the northern red oak. There is a complex of small streams. This will ~~be~~ probably be given, or at least the part of it with the big hemlocks, sooner or later. I am not sure of the acreage of this.

Both Mrs. Howe and Dr. Olive would doubtless be willing to be members of the project committee. I have told Dr. Howe that she should be, as the donors of land usually did serve in this capacity, and since her house is across the road from ~~this area~~ the bog, she would be in a good position to watch over it.

I talked about the Nature Conservancy to the Highlands Garden Club and they proved to be a very responsive audience, indeed. They are a very civic minded group and with some leadership, can be made into an effective influence for conservation in this community. If we can handle them right we can perhaps, through them, reach considerable wealth, too. Their conservation chairman is Mrs. Tyson, who invited me to lunch. Interested people also, are Mrs. Davenport, an elderly northern lady who live in Highlands, and Miss Helen Auger, a former New York secretary who lives in Highland

the year around.

Dr. Ralph M. Sargent, head of the English Dept. of Haverford College, is a summer resident of Highlands, a very active amateur naturalist and photographer, and well respected in Highlands. He is a member of the board of the Biological Station.

Mr. Frank Dulany ~~is also a~~, who has already given us an area and set aside another, has a home in Highlands, and some property, though his main home is in Savannah.

Both Mr. Dulany and Prof. Sargent should be asked to serve on the Project committee.

Another way that we can build up a complex of natural areas around Highlands is by working with the Nantahala National Forest. Mr. Wright and Dr. Howell have been working on this for years at the local ranger level.

and have got at least 5 areas designated as scientific areas on the maps in the ~~regional~~ district ranger's office. However, the ranger with whom they worked has recently been transferred, and they do not know if any recommendations have been made to the regional office in Atlanta or from there to Washington. One of these areas, designated as Tract M-9, borders the area being given by Mr. Wright on two sides. The lower part of it has been cut over for the large hemlock but the higher part, called Chestnut Ridge is a most interesting and important area. It has what may be the largest stand of the endemic Carolina Hemlock in existence, as well as Table Mountain pine, Rhododendron catawbiense, Lycopodium and other interesting plants.

My appeal to these people was to suggest that they undertake a project of working toward a system of natural areas that will provide for the Highlands Biological Station examples of all the important landscape types, biotopes, and habitats that are found in the Highlands region. Some of these will be set aside by the Forest Service. Others will be donated. Others will doubtless have to be purchased. The first necessity, after the Project Committee is formed, will have to be a survey to determine what kinds of areas are required and where the best areas are. This should be done by a good ecologist, working especially with Mr. Wright and with the local field man of the Station.

I have suggested that it is not important who holds title to the areas.

so long as they are permanently preserved and dedicated as natural areas. We could hold title and lease them to the Station, or if a satisfactory agreement could be negotiated with the Station, those that we ~~[illegible]~~ had title to, or some of them, could be transferred to the Station with suitable reverter clauses.

1964 Virginia

Labels typed 45913-45924

Oct. 25, 1964 - "Tolson's grange" 3 mi. s. of Great Falls of the Potomac.

45913 Carpinus caroliniana
1 cultivated (wild plant transplanted from Great Falls)

Nov. 15, 1964 - Wildcat Mt. Preserve west slope along road at old dumpsite

3 14 Celidonium majus L.
established

4 15 Nepeta cataria L.
established

1 16 Mentha spicata
no plant seen

1 17 Melissa officinalis L.
sparingly established

~~13 Hedyotis purpurea (L.)~~
~~occasion~~
in old road on lower west slope in open ~~[illegible]~~ mixed forest

1 18 Hedyotis purpurea (L.) T+G.
occasional

1 19 Vitis cf. aestivalis

1 20 Muhlenbergia sobolifera (Muhl.)
local, forming small colonies

1 21 Agrostis perennans v. aestivalis Vasey
common

1 22 Vinca minor L.
one colony several m across seen

Fairfax Co.

45913 ✓ Fairfax Co. Clark

45914-24 ~~Alex Berger~~ Clark
~~Shen.~~
Nat. Pk.
Va.

prostrate creeping vine.
sterile

45913 Fairfax Co. Clark

45914-24 ~~Alex. Bergs~~ Clark
Shen.
Nat. Pk.
Va.

1964 Virginia

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45924

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~~occasion~~
in old road on lower
west slope in open
~~[illegible]~~ mixed forest
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local, forming small colonies
1 21 Agrostis perennans v. aestivalis Vasey
common
1 22 Vinca minor L.
one colony several m across seen

Fairfax Co.

small much branched
tree 3-4 m. tall; leaves
turning yellow.

Fauquier Co.

sap orange red, root
— fleshy; sterile.
strongly aromatic.

strong spearmint odor.

citronella odor

plants with abnormal
— pseudo-whorl of leaves
fruit cluster picked up
from ground, grapes globose,
with thin bloom, sweetish,
— poor flavor.
7 in. erect, dry.

? dry, culms ascending,

prostrate creeping vine.
sterile

1964 Virginia

Nov. 15 – Wildcat Mt.

Most of leaves are off of deciduous trees except some oaks which retain brown leaves, ~~some~~ Q. rubra saplings with leaves red still.

Small flock of chickadees and small flock of crows in forest on upper slopes.

Mature Q. rubra have almost no leaves left, but saplings to 5 m still have many lvs. not yet dry.

Vitis sp. fruit on ground blue, good flavor, small seed.

Dianthus armeria in fl.

Prunella vulgaris in fl.

A patch of Lonicera japonica on road below pump house down on relatively flat ground – extends 60 paces to west, 75 paces to east.

---

labels typed

ctd from 141

45923 Vitis aestivalis

1

4 24 Perilla frutescens (L.) Britt.
common locally

Fauquier Co.

fruit cluster picked up from ground. grapes globose, somewhat sweet, good flavor, black with slight bloom.

erect, dry.

1964 Virginia

Nov. 22 – Trip to Fredericksburg from Alexandria, by car.

Oak forest – all the trees practically, have brown leaves to about half their height. The crowns are bare and the lower branches, especially short lateral branches are still quite leafy. Saplings are mostly still leafy.

Belvedere Farm –
a great flock of starlings in pasture – several thousand of them. A great many, also, roosting in trees around edges of Berger stand.

Plants identifiable at this season

Pinus virginiana
Juniperus virginiana
Echium vulgare
Plantago aristata
Lepidium virginicum
Eragrostis spectabilis
Rumex acetosella
Setaria viridis
Verbascum thapsus
Campsis radicans
Gnaphalium obtusifolium
Andropogon virginicus
Conyza canadensis

Actinomeris alternifolia
Tridens flavus
Chenopodium ambrosioides
Platanus occidentalis
Perilla frutescens
Aster pilosus
Lonicera japonica
Glecoma hederacea
Ambrosia artemisiifolia
Betula nigra
Setaria faberi
Cirsium cf. vulgare
Panicum clandestinum
Liquidambar styraciflua
Solanum carolinense
Plantago lanceolata
Elephantopus carolinianus
Acer rubrum
Juglans nigra
Rosa multiflora
Allium vineale
Rudbeckia hirta
Sorghastrum nutans
Xanthium strumarium
Robinia pseudoacacia
Rubus cf. argutus

2 bluebirds 4 mourning doves

1964 Virginia

Lower meadow is a thin tall stand of Andropogon, Tridens, etc. Many other tall herbs, all dry at this season except one or two species — Solidago ?, Aster ?;
All leaves off trees.
Considerable patches of Echium, Elephantopus, Andropogon, Tridens, etc.

Labels typed 45925 – 45930

Nov. 17 – Washington,
E St. and 20th NW

45925 Lepidium virginicum
3
common in recently disturbed weedy ground between sidewalk and curb

Nov. 22 – Alexander Berger Sanctuary, Rappahannock 3 miles below Fredericksburg in meadow on flood plain along river

1 26 Acalypha gracilens Gray
common

1 27 Lespedeza stipulacea Maxim.
common locally

1 28 Trichostema cf. dichotomum L.
occasional

2 29 Andropogon elliottii
common

2 30 Aristida oligantha Michx.
common

A fe

ar

30 Alex Berger, Bl.

45925 – DC blanks ~~if any~~

✓ – otherwise one with blank heading

small tufts, already dry.

small tufts, already dry,

45926 - 30 alex Berger, Pl

45925 - DC blanks

~~if any~~

✓ - otherwise one with blank heading

1964 Virginia

Lower meadow is a thin tall stand of Andropogon, Tridens, etc. Many other tall herbs, all dry at this season except one or two specie — Solidago?, Aster?

All leaves off trees.

Considerable patches of Echium, Elephantopus, Andropogon, Tridens, etc.

Labels typed 45925–45930

Nov. 17 – Washington, E St. and 20th NW

45925 3 Lepidium virginicum common in recently disturbed weedy ground between sidewalk and curb.

Nov. 22 – Alexander Berger Sanctuary, Rappahannock River 5 miles below Fredericksburg in meadow on flood plain along river

1 26 Acalypha gracilens Gray common

1 27 Lespedeza stipulacea Maxim. common locally

1 28 Trichostema cf. dichotomum L. occasional

2 29 Andropogon elliottii common

2 30 Aristida oligantha Michx. common

A few small N C signs around preserve. The only no-hunting signs are old ones from last year or earlier.

petals white. The season has been unusually mild.

plants already dry.

plants already dry

plants already dry

small tufts, already dry.

small tufts, already dry.

1964 Virginia

Nov. 30 - Alexander Berger Preserve

Mrs. Smith says Mr. King of Fredericksburg, geneologist, has much historical information on area.

Area around beaver pond just below old road right of way -

c Liriodendron
vc Betula nigra
o Fagus grandifolia
c Platanus occidentalis

On ~~[illegible]~~ flood plain slightly high spots of gravel have stands of Echium. Patches of Cirsium in meadow small bird in them.

Gleditsia triacanthos

Large rabbit
Box tortoise shell
8 or 10 ducks (wood ducks?)

Beaver dam and lower end of pond lined with Hibiscus sp.

1964 Virginia

Labels typed 45931 - 46938

Nov. 30 - same loc.
on flood plain terrace

45931 Elymus
2 under trees on river bank

4 32 Hibiscus
abundant on beaver dam
and edges of pond.

3 33 Cephalanthus occidentalis.
occasional along edges of pond

2 34 Alisma ?
common in muddy ground
around pond

1 35 Gledits~~ch~~ia triacanthos
rare in patch of
woods.

1 36 (hepatic)
abundant on mud
around edge of pond

1 same - in woods in
ravine

1 37 Polyporus
on fallen piece of rotten wood.

1 38 Carpinus caroliniana
occasional

Spottsylvania Co.

1-2 m.

dry, except some basal leaves.

shrubs 2 m. tall,
~~much branc~~ many
- straight stems from base.
shrub 1.5 m. tall, fruiting
cymes mostly nodding
- or drooping, dry.
above-ground parts of
plant dry.

tree 8 m. tall, with branched
thorns on trunk, leafless
at this season.

2.5 m

tree 6 m. tall, leafless,
fruits shaken off tree,
spinning as they fall.
carrying fruit.